Digital Storage Oscilloscope

GDS-2000HD/HG series

PROGRAMMING MANUAL

ISO-9001 CERTIFIED MANUFACTURER

GW INSTEK

The information in this manual was correct at the time of printing. However, Good Will continues to improve products and reserves the right to change specifications, equipment, and maintenance procedures at any time without notice.

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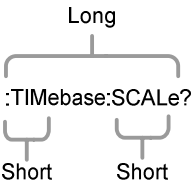
Table of Contents

COMMAND OVERVIEW

The Command overview chapter lists all GDS-2000HD/HG commands in functional order as well as alphabetical order. The command syntax section shows you the basic syntax rules you have to apply when using commands.

Command Syntax

Compatible standard	• USB CDC_ACM compatible • SCPI, 1994 (partially compatible)
Command forms	Commands and queries have two different forms, long and short. The command syntax is written with the short form of the command in capitals and the remainder (long form) in lower case.



The commands can be written in capitals or lower-case, just so long as the short or long forms are complete. An incomplete command will not be recognized.

Below are examples of correctly written commands.

LONG	:TIMebase:SCALe? :timebase:scale?	:TIMEBASE:SCALE?
SHORT	:TIM:SCAL?	:TIM:SCAL?

Command format :TIMebase:SCALe <NR3>LF

1: command header
2: single space
3: parameter
4: message terminator

Parameter	Type	Description	Example
	<Boolean>	boolean logic	0, 1
	<NR1>	Integers	0, 1, 2, 3
	<NR2>	floating point	0.1, 3.14, 8.5
	<NR3>	floating point with an exponent	4.5e-1, 8.25e+1
	<NRf>	any of NR1, 2, 3	1, 1.5, 4.5e-1
Message terminator	LF	line feed code	

Note Commands are non-case sensitive.

List of Commands in Functional Order

COMMAND DETAILS

The Command details chapter shows the detailed syntax, equivalent panel operation, and example for each command. For the list of all commands, see page6.

Common Commands

*IDN? → Query

Description	Returns the manufacturer, model, serial number and version number of the unit.
Syntax	*IDN?
Example	*IDN? GW,GDS-2254HD,PXXXXXX,V1.XX

*RST → Set

Description	Resets the GDS-2000HD/HG (recalls the default panel settings).
Syntax	*RST

*CLS → Set

Description	Clears the error queue.
Syntax	*CLS

*ESE → Set / Query

Description	Sets or queries the Standard Event Status Enable register.
Syntax	*ESE <NR1>
Query Syntax	*ESE?
Return parameter	<NR1> 0~255

Bit Weight

Bit#	Weight	Event	Description
0	1	OPC	Operation Complete Bit
1	2	RQC	Not used

	2	4	QYE	Query Error
	3	8	DDE	Device Error
	4	16	EXE	Execution Error
	5	32	CME	Command Error
	6	64	URQ	User Request
	7	128	PON	Power On

Example *ESE?

>4

Indicates that there is a query error.

*ESR

→ Query

Description	Queries the Standard Event Status (Event) register. The Event Status register is cleared after it is read.			
Query Syntax	*ESR?			
Return parameter	<NR1>	0~255		
Bit Weight	Bit#	Weight	Event	Description
	0	1	OPC	Operation Complete Bit
	1	2	RQC	Not used
	2	4	QYE	Query Error
	3	8	DDE	Device Error
	4	16	EXE	Execution Error
	5	32	CME	Command Error
	6	64	URQ	User Request
	7	128	PON	Power On

Example *ESR?

>4

Indicates that there is a query error.

*OPC

Set → / → Query

Description	The *OPC command sets the OPC bit (bit0) of the Standard Event Status Register when all current commands have been processed. The *OPC? Query returns 1 when all the outstanding commands have completed.
Syntax	*OPC
Query Syntax	*OPC?
Return parameter	1 Returns 1 when all the outstanding commands have completed.

*SRE

Set → / → Query

Description	Sets or queries the Service Request Enable register. The Service Request Enable register determines which registers of the Status Byte register are able to generate service requests.
Syntax	*SRE <NR1>
Query Syntax	*SRE?
Parameter/ Return parameter	<NR1> 0~255

Bit Weight

Bit#	Weight	Event	Description
0	1		Not used
1	2		Not used
2	4		Not used
3	8		Not used
4	16	MAV	Message Available Bit
5	32	ESB	Event Status Bit
6	64	MSS	Master Summary Bit
6	64	RQS	Request Service Bit

	7	128		Not used
Example	*SRE?			
	>48			
	Indicates that the MAVB and ESB bit are both set.			

*STB

→ Query

Description	Queries the bit sum of the Status Byte register with MSS (Master summary Status) replacing the RQS bit (bit 6).			
Query Syntax	*STB?			
Return parameter	<NR1>	0 ~ 255		
Bit Weight	Bit#	Weight	Event	Description
	0	1		Not used
	1	2		Not used
	2	4		Not used
	3	8		Not used
	4	16	MAV	Message Available Bit
	5	32	ESB	Event Status Bit
	6	64	MSS	Master Summary Bit
	6	64	RQS	Request Service Bit
	7	128		Not used
Example	*STB?			
	>16			
	Indicates that the MAV bit is set.			

Mask Commands

:MASK:STATe

Set → / → Query

Description	Set or query pass/ fail function status.	
Syntax	:MASK:STATE {ON|OFF|<NR1>} :MASK:STATe?	
Parameter	ON	Turn the mask function on.
	OFF	Turn the mask function off.
	<NR1>	is 0 to disable this function; other values to enable this function
Example	:MASK:STATe ON Query pass/fail function status to ON	

:MASK:SOURce

Set → / → Query

Description	Sets or returns the compared source.	
Syntax	:MASK:SOURce {CH1|CH2|CH3|CH4} :MASK:SOURce?	
Parameter	CH1~CH4:	Channel 1 to Channel 4.
Example	:MASK:SOURce CH1 Set the compared source as channel 1.	

:MASK:VIOLation

Set → / → Query

Description	Set or returns actions for the mask violations.	
Syntax	:MASK:VIOLation {STOP|CONTinue} :MASK:VIOLation?	
Parameter	STOP	The waveform will be frozen.
	CONTinue	Ignore the violation.

Example	:MASK:VIOLation STOP Sets the violation action to stop.

:MASK:VIOLation:MODe

Set → / → Query

Description	Set or query pass/fail function type.
Syntax	:MASK:VIOLation:MODe {PASS|FAIL} :MASK:VIOLation:MODe?
Parameter	PASS FAIL
Example	:MASK:VIOLation:MODe PASS Set pass/fail type to PASS.

:MASK:VIOLation:BEEP

Set → / → Query

Description	Set or query the pass/fail beep function status.	
Syntax	:MASK:VIOLation:BEEP {ON|OFF|<NR1>} :MASK:VIOLation:BEEP?	
Parameter	ON	Enable beep function.
	OFF	Disable beep function.
	<NR1>	<NR1> is 0 to disable this function; other values to enable this function.
Example	:MASK:VIOLation:BEEP ON Set pass/fail beep function status to ON.	

:MASK:SAVe (0 - 7)

Set →

Description	Save rules as set 0 to set 7. (only 8 sets can be saved)	
Syntax	:MASK:SAVe <0 -7>	
Parameter	<0 - 7>	File set and perform the save operation.

Example	:MASK:SAVe 5 Save rules as 5th set
Note	Saving is invalid if the creation rule is not executed. When saving with existing data, it will directly overwrite the original data.

:MASK:RECAll (0 - 7) Set →

Description	Read the corresponding pass/fail test rules.
Syntax	:MASK:RECAll <QString>
Parameter	<QString> Read the corresponding pass/fail test rules, 0-8.
Example	:MASK:RECAll 2 Read pass/fail test rules from 2nd set

:MASK:RESults:FAILed → Query

Description	Query number of frames failed during pass/fail test function.
Syntax	:MASK:RESults:FAILed?
Example	:MASK:RESults:FAILed? :MASK:RESults:FAILED 0

:MASK:RESults:PASSed → Query

Description	Query number of frames passed during pass/fail test function.
Syntax	:MASK:RESults:PASSed?
Example	:MASK:RESults:PASSed? :MASK:RESults:PASSed 473

:MASK:RESults:TOTal → Query

Description	Query total frames number of during pass/fail test function.
Syntax	:MASK:RESults:TOTal?
Example	:MASK:RESults:TOTal? :MASK:RESults:TOTal 764

:MASK:AUTo → Set / → Query

Description	Creates a mask fast in according to the reference source. Or returns the setting of the mask.	
Syntax	:MASK:AUTo {<Xmask>,<Ymask>} :MASK:AUTo?	
Parameter	<Xmask>	Sets the horizental range for the mask.
	<Ymask>	Sets the vertical range for the mask.
Example	:MASK:AUTo 0.2,1.2 Sets the range of mask as {0.2,1.2} and creates a mask.	

:MASK:RESults:DISPlay → Set / → Query

Description	Sets or queries the display state of mask results menu.	
Syntax	:MASK:RESults:DISPlay {ON|OFF} :MASK:RESults:DISPlay?	
Parameter	ON	Turns on the mask results menu.
	OFF	Turns off the mask results menu.
Example	:MASK:RESults:DISPlay ON :MASK:RESults:DISPlay? ON	

Acquisition Commands

:ACQuire:AVERage

Set → / → Query

Description	Selects or returns the number of waveform acquisitions that are averaged in the average acquisition mode.	
Syntax	:ACQuire:AVERage {<NR1>| ?}	
Related Commands	:ACQuire:MODe	
Parameter	<NR1>	2, 4, 8 ,16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768, 65536
Note	Before using this command, select the average acquisition mode. See the example below.	
Example	:ACQuire:MODe AVERage :ACQuire:AVERage 2 Selects the average acquisition mode, and sets the average number to 2.	

:ACQuire:MODe

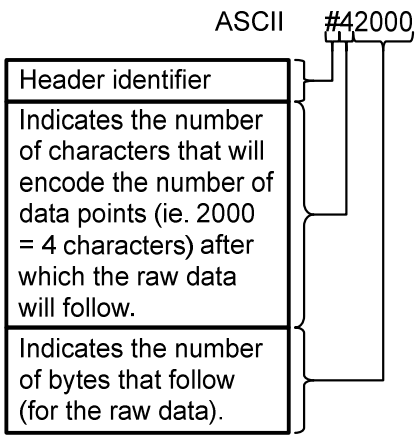
Set → / → Query

Description	Selects or returns the acquisition mode.	
Syntax	:ACQuire:MODe {SAMPle | PDETect | HIRes | AVERage | ?}	
Related Commands	:ACQuire:AVERage	
Parameter	SAMPle	Sample mode sampling
	PDETect	Peak detect sampling
	HIRes	High Resolution sampling
	AVERage	Average sampling mode

Example	:ACQuire:MODe PDETect Sets the sampling mode to peak detection.

:ACQuire<X>:MEMory? → Query

Description	Returns the data in acquisition memory for the selected channel as a header + raw data.	
Syntax	:ACQuire<X>:MEMory?	
Related Commands	:ACQuire:RECOrdlength :HEADer	
Parameter	<X>	Channel number (1 to 4)
Return parameter	<string> <waveform block data>	Returns acquisition settings followed by raw waveform block data. <string> Returns the acquisition settings for the selected channel. Format: parameter(1),setting(1);parameter(2),setting(2)…parameter(n),setting(n);Waveform Data; <waveform block data> Header followed by the raw waveform data. Format: Header: The header (in ASCII) encodes the number of bytes for the header followed by the number of data points in bytes for the raw data.



Raw Data:
Each two bytes (in hex) encodes the vertical data of a data point. The data is signed hex data (2's complement, -32768 ~ 32767).

Waveform Raw Data Example:
Header raw data…….

Hex:

23 34 32 30 30 30 00 1C 00 1B 00 1A 00 1A 00 1B ……...

ASCII/Decimal:

#42000 28 27 26 26 27…….

The actual value of a data point can be calculated with the following formula:
(Decimal value of hex data/AD Factor) * vertical scale.

Note: AD Factor is fixed as 25. The vertical scale is returned with the acquisition settings that precede the raw data.

For example if the raw data for a

		point is 001C (=28 decimal) then, (28/25) x 0.5 = 0.56V
Example	:ACQuire1:MEMory?	
	Format,3.0HD;Memory Length,10000;IntpDistance,0;Trigger Address,49;Trigger Level,2.3200;Source,CH1;Vertical Units,V;Vertical Units Extend Div,0;Label,ACK;Probe Type,0;Probe Ratio,10.0000;Vertical Scale,1.0000;Vertical Position,-560.0000E-3;Horizontal Units,s;Horizontal Scale,100.0000E-6;Horizontal Position,420.0000E-6;Horizontal Mode,Main;SincET Mode,Real Time;Sampling Period,200.0000E-9;Horizontal Old Scale,100.0000E-6;Horizontal Old Position,420.0000E-6;Firmware,V1.16;Time,18-Dec-25 17:16:07;Data Bit,12;AD Factor,400; Waveform Data; #520000……..follows waveform block data in hex……..	

:ACQuire:FILTer:SOURce

Set → / → Query

Description	Returns the source of the filter.	
Syntax	:ACQuire:FILTer:SOURce {CH1|CH2|CH3|CH4|?}	
Parameter/ Return parameter	CH1 ~ CH4	Source channel
Example	:ACQuire:FILTer:SOURce?	
	CH1	
	Sets the filter source to CH1.	

:ACQuire:FILTer

Set → / → Query

Description	Turns the filter on/off or queries its status.
Syntax	:ACQuire:FILTer {ON|OFF|?}

Parameter/ Return parameter	ON	Filter on.
	OFF	Filter off.
Example	:ACQuire:FILTer? OFF Indicates that the filter is turned off.	

:ACQuire:FILTer:FREQuency:UPPER

Set → Query

Description	Sets or returns the filter upper frequency.	
Syntax	:ACQuire:FILTer:FREQuency:UPPER {DEFault} :ACQuire:FILTer:FREQuency:UPPER <NRf> :ACQuire:FILTer:FREQuency:UPPER?	
Parameter	DEFault	Sets the frequency to default.
	<NRf>	Sets the frequency to user. (Range: 1Hz ~ 500MHz)
Example	:ACQuire:FILTer:FREQuency:UPPER 4.95e+07 :ACQuire:FILTer:FREQuency:UPPER? 4.950000e+07	

:ACQuire:FILTer:FREQuency:LOWER

Set → Query

Description	Sets or returns the filter lower frequency.	
Syntax	:ACQuire:FILTer:FREQuency:LOWER {DEFault} :ACQuire:FILTer:FREQuency:LOWER <NRf> :ACQuire:FILTer:FREQuency:LOWER?	
Parameter	DEFault	Sets the frequency to default.
	<NRf>	Sets the frequency to user. (Range: 1Hz ~ 500MHz)
Example	:ACQuire:FILTer:FREQuency:LOWER 1.25e+07 :ACQuire:FILTer:FREQuency:LOWER? 1.250000e+07	

:ACQuire:FILTer:TYPe

Set →
→ Query

Description	Sets or returns the filter type.
Syntax	:ACQuire:FILTer:TRACking {LOWPass | HIGHPass| BANDPass | BANDReject} :ACQuire:FILTer:TYPe?
Parameter	LOWPass — Lowpass Type. HIGHPass — Highpass Type. BANDPass — Bandpass Type. BANDReject — Bandreject Type
Example	:ACQuire:FILTer:TYPe? >LOWPass Returns low pass type as present filter type

:ACQuire:FILTer:WINDow

Set →
→ Query

Description	Query or set the window for filter function.
Syntax	:ACQuire:FILTer:WINDow {RECTangular | HAMming| HANning | BLAckman |TAPered| TRIAngular} :ACQuire:FILTer:WINDow?
Example	:ACQuire:FILTer:WINDow RECTangular Set filter window type to RECTangular

:ACQuire:FILTer:VERTical:POSition

Set →
→ Query

Description	Query or set the vertical position of the filter function.
Syntax	:ACQuire:FILTer:VERTical:POSition <NR3> :ACQuire:FILTer:VERTical:POSition ?

Parameter	<NR3>	Is a float number that specifies the desired position from the center grid division. The range is ±5 divisions, with a resolution of 0.01 divisions.
Example	:ACQuire:FILTer:VERTical:POSition 1 Set the vertical position of the filter to 1div	

:ACQuire<X>:STATe? → Query

Description	Returns the status of waveform data.	
Syntax	:ACQuire<X>:STATe?	
Parameter	<X>	Channel number (1 to 4)
Return parameter	0	Raw data is not ready
	1	Raw data is ready
Example	:ACQuire1:STATe? 0 Returns 0. Channel 1's raw data is not ready.	
Note	If the oscilloscope changes the acquisition status from STOP to RUN, the status will be reset as zero.	

:ACQuire:INTERpolation → Set / → Query

Description	Selects or returns the interpolation mode.	
Syntax	:ACQuire:INTERpolation {ET | SINC | ?}	
Parameter/Return parameter	ET	Equivalent Time interpolation. The GDS-2000HD/HG doesn't support ET.
	SINC	Sets to SIN(X)/X interpolation
Example	:ACQuire:INTERpolation? >SINC Returns SINC as the interpolation mode.	

:ACQuire:RECOrdlength

Set → / → Query

Description	Sets or queries the record length.	
Syntax	:ACQuire:RECOrdlength {<NRf>| ?}	
Parameter/Return parameter	<NRf>	Record length. Settable record length: (1e+3 | 1e+4 | 1e+5 | 1e+6 | 1e+7| 1e+8)
Example	:ACQuire:RECOrdlength 1e+3 Sets the record length to 1000 points.	

:ACQuire:SAMPlerate?

→ Query

Description	Querys the value of sample rate.
Syntax	: ACQuire:SAMPlerate?
Example	: ACQuire:SAMPlerate? 1.00000E+09

Autoscale Commands

:AUTOSet

Set →

Description	Runs the Autoset function to automatically configure the horizontal scale, vertical scale, and trigger according to the input signal.
Syntax	:AUTOSet

Vertical Commands

:CHANnel<X>:BWLimit

Set →
→ Query

Description	Sets or returns the bandwidth limit on/off.	
Syntax	:CHANnel<X>:BWLimit {FULL | <NR3> | ?}	
Parameter	<X>	Channel 1, 2, 3, 4
	FULL	Full bandwidth
	<NR3>	Sets the bandwidth limit to a pre-defined bandwidth.
		100E+6: 100MHz
		20E+6: 20MHz
Return Parameter	<NR3>	Returns the bandwidth.
	Full	Full bandwidth
Example	:CHANnel1:BWLimit 2.000E+07	
	Sets the channel 1 bandwidth to 20MHz.	

:CHANnel<X>:COUPling

Set →
→ Query

Description	Selects or returns the coupling mode.	
Syntax	CHANnel<X>:COUPling {AC | DC | GND | ?}	
Parameter	<X>	Channel 1, 2, 3, 4
	AC	AC coupling
	DC	DC coupling
	GND	Ground coupling
Return parameter	Returns the coupling mode.	
Example	:CHANnel1:COUPling DC	
	Sets the coupling to DC for Channel 1.	

:CHANnel<X>:DISPlay

Set → / → Query

Description	Turns a channel on/off or returns its status.	
Syntax	:CHANnel<X>:DISPlay {OFF | ON | ?}	
Parameter	<X>	Channel 1, 2, 3, 4
	OFF	Channel off
	ON	Channel on
Return Parameter	ON	Channel is on
	OFF	Channel is off
Example	:CHANnel1:DISPlay ON Turns on Channel 1	

:CHANnel<X>:EXPand

Set → / → Query

Description	Sets Expand By Ground or Expand By Center for a channel or queries its status.	
Syntax	:CHANnel<X>:EXPand {GND | CENTer | ?}	
Parameter	<X>	Channel 1, 2, 3, 4
	GND	Ground
	CENTer	Center
Return parameter	GND	Expand By Ground
	CENTER	Expand By Center
Example	:CHANnel1:EXPand GND Sets Channel 1 to Expand By Ground.	

:CHANnel<X>:IMPedance

Set →
→ Query

Description	Sets or returns the impedance of the oscilloscope.	
Syntax	:CHANnel<X>:IMPedance {50 | 1M | ?}	
	:CHANnel<X>:IMPedance?	
Parameter	<x>	Channel
	1/2/3/4	CH1/2/3/4
Return parameter	<NR3>	Returns the impedance value.
Example	:CHANnel1:IMPedance? 1.000000E+06	
	The impedance is 1M ohms.	

:CHANnel<X>:INVert

Set →
→ Query

Description	Inverts a channel or returns its status.	
Syntax	:CHANnel<X>:INVert {OFF | ON | ?}	
Parameter	<X>	Channel 1, 2, 3, 4
	OFF	Invert off
	ON	Invert on
Return parameter	ON	Invert on
	OFF	Invert off
Example	:CHANnel1:INVert ON	
	Inverts Channel 1	

:CHANnel<X>:POSition

Set → / → Query

Description	Sets or returns the position level for a channel.	
Note	The vertical position will only be set to closest allowed value. The position level range depends on the vertical scale. The scale must first be set before the position can be set.	
Syntax	:CHANnel<X>:POSition { <NRf> | ?}	
Parameter	<X>	Channel 1, 2, 3, 4
	<NRf>	Position. Range depends on the vertical scale.
Return parameter	<NR3>	Returns the position value.
Example 1	:CHANnel1:POSition 2.4E–3 Sets the Channel 1 position to 2.4mV/mA	
Example 2	:CHANnel1:POSition? 2.4E-3 Returns 2.4mV as the vertical position.	

:CHANnel<X>:PROBe:RATio

Set → / → Query

Description	Sets or returns the probe attenuation factor.	
Syntax	:CHANnel<X>:PROBe:RATio { <NRf> | ?}	
Related Commands	:CHANnel<X>:PROBe:TYPe	
Parameter	<X>	Channel 1, 2, 3, 4
	<NRf>	Probe attenuation factor
Return parameter	<NR3>	Returns the probe factor
Example	:CHANnel1:PROBe:RATio 1.00E+0 Sets the Channel 1 probe attenuation factor to 1x	

:CHANnel<X>:PROBe:TYPe

Set →
→ Query

Description	Sets or returns the probe type (voltage/current).	
Syntax	:CHANnel<X>:PROBe:TYPe { VOLTage | CURRent | POWer | UNKNown |?}	
Related Commands	:CHANnel<X>:PROBe:RATio	
Parameter	<X>	Channel 1, 2, 3, 4
	VOLTage	Voltage
	CURRent	Current
	POWer	Power
	UNKNown	Unknow
Return parameter	Returns the probe type.	
Example	:CHANnel1:PROBe:TYPe VOLTage Sets the Channel 1 probe type to voltage.	

:CHANnel<X>:SCALe

Set →
→ Query

Description	Sets or returns the vertical scale. The scale depends on the probe attenuation factor. Note the probe attenuation factor should be set before the scale.	
Syntax	:CHANnel<X>:SCALe { <NRf> | ?}	
Parameter	<X>	Channel 1, 2, 3, 4
	<NRf>	Vertical scale: 2e–3 to 1e+1 2mV to 10V (Probe x1)
Return parameter	<NR3>	Returns the vertical scale in volts or amps.
Example	:CHANnel1:SCAle 2.00E–2 Sets the Channel 1 vertical scale to 20mV/div	

Math Commands

:MATH:DISP

Set → / → Query

Description	Turns the math display on or off on the screen.	
Syntax	:MATH:DISP {OFF|ON|?}	
Parameter/ Return parameter	OFF	Math is not displayed on screen
	ON	Math is displayed on screen
Example	:MATH:DISP OFF Math is off.	

:MATH:TYPe

Set → / → Query

Description	Queries or sets the Math type to FFT, Advanced Math or to dual channel math operations	
Syntax	:MATH:TYPe { DUAL | ADVanced | FFT | ? }	
Related Commands	:MATH:DISP	
Parameter	DUAL	Dual channel operations
	ADVanced	Advanced math operations
	FFT	FFT operations
Return parameter	Returns the math type.	
Example	:MATH:TYPe DUAL Sets the Math type to dual channel math operation.	

:MATH:DUAL:SOURce<X>

Set → / → Query

Description	Sets the dual math source for source 1 or 2.
Syntax	:MATH:DUAL:SOURce<X> { CH1 | CH2| CH3 | CH4 | ? }

Parameter	<X>	Source number 1 or 2
	CH1~4	Channel 1 to 4
Return parameter	Returns the source for the source 1 or 2.	
Example	:MATH:DUAL:SOURce1 CH1 Sets source1 as channel 1.	

:MATH:DUAL:OPERator

Set → Query

Description	Sets the math operator for dual math operations.	
Syntax	:MATH:DUAL:OPERator {PLUS | MINUS | MUL| DIV|?}	
Parameter	PLUS	+ operator
	MINUS	- operator
	MUL	× operator
	DIV	÷ operator
Return parameter	Returns operator type.	
Example	:MATH:DUAL:OPERator PLUS Sets the math operator as plus (+).	

:MATH:DUAL:POSition

Set → Query

Description	Sets the vertical position of the displayed math result expressed by unit/division.	
Syntax	:MATH:DUAL:POSition {<NRf> | ? }	
Parameter	<NRf>	Vertical position Depends on the vertical scale (Unit/Div)
Return parameter	<NR3>	Returns the vertical position.
Example	:MATH:DUAL:POSition 1.0E+0 Sets the vertical position to 1.00 unit/div.	

:MATH:DUAL:SCALe

Set → / → Query

Description	Sets the vertical scale of the displayed math result.	
Syntax	:MATH:DUAL:SCALe {<NRf> | ?}	
Parameter	<NRf>	Vertical scale
Return parameter	<NR3>	Returns the scale.
Example	:MATH:DUAL:SCALe 2.0E-3 Sets the vertical scale to 2mV/2mA.	

:MATH:FFT:SOURce

Set → / → Query

Description	Sets and queries the FFT math source.	
Syntax	:MATH:FFT:SOURce { CH1 | CH2 | CH3 | CH4 | ? }	
Related commands	:MATH:ADVanced:EDIT:SOURce<X> :MATH:ADVanced:EDIT:OPERator	
Parameter	CH1~4	Channel 1 to 4
Return parameter	Returns the FFT source.	
Example	:MATH:FFT:SOURce CH1 Sets the FFT math source as channel 1.	

:MATH:FFT:MAG

Set → / → Query

Description	Sets FFT vertical units as linear or decibels.	
Syntax	:MATH:FFT:MAG {LINEAR|DB|RADians|DEGrees|?}	
Parameter	LINEAR	Linear units (Vrms)
	DB	Logarithmic units (dB)
	RADIANS	Radians units
	DEGRESS	Degree unit
Return parameter	Returns the FFT vertical units.	

Example	:MATH:FFT:MAG DB Sets FFT vertical units to dB.

:MATH:FFT:WINDow

Set → / → Query

Description	Sets the windowing filter used for the FFT function.	
Syntax	:MATH:FFT:WINDow {RECTangular|HAMming|HANning|BLAckman|BARtlett|KAISer|?}	
Parameter	RECTangular	Rectangular window
	HAMming	Hamming window
	HANning	Hanning window
	BLAckman	Blackman window
	BARtlett	Bartlett window
	KAISer	Kaise window
Return parameter	Returns the FFT window.	
Example	:MATH:FFT:WINDow HAMming Sets the FFT window filter to hamming.	

:MATH:FFT:POSition

Set → / → Query

Description	Sets the vertical position of the displayed FFT result.	
Syntax	MATH:FFT:POSition { <NRf> | ? }	
Parameter	<NRf>	Vertical position: -12e+0 to +12e+0 (12 units/division to +12 units/division.)
Return parameter	<NR3>	Returns the vertical position.
Example	:MATH:FFT:POSition -2e-1 Sets the FFT position to -0.2 divisions.	

:MATH:FFT:SCALe

Set → / → Query

Description	Sets the vertical scale of the displayed FFT result.	
Syntax	:MATH:FFT:SCALe {<NRf> | ?}	
Parameter	<NRf>	Vertical scale: Linear: 2e-3 to 1e+3 (2mV~1kV) dB: 1e+0 to 2e+1 (1~20dB)
Return parameter	<NR3>	Returns vertical scale.
Example	:MATH:FFT:SCAle 1.0e+0 Sets the scale to 1dB.	

:MATH:FFT:HORizontal:SCALe

Set → / → Query

Description	Sets or queries the zoom scale for FFT math.	
Syntax	:MATH:FFT:HORizonatal:SCALe {<NRf> | ?}	
Parameter	<NRf>	Zoom scale: 1 to 20 times
Return parameter	<NR3>	Returns zoom scale.
Example	:MATH:FFT:HORizontal:SCALe 5 Sets the zoom scale to 5X.	

:MATH:FFT:HORizontal:POSition

Set → / → Query

Description	Sets the horizontal position of the displayed FFT result.	
Syntax	MATH:FFT:HORizontal:POSition { <NRf> | ? }	
Parameter	<NRf>	Horizontal position: 0Hz ~ 999.9kHz
Return parameter	<NR3>	Returns the vertical position.
Example	:MATH:FFT:HORizontal:POSition 6.0e5 Sets the FFT horizontal position to 600kHz.	

:MATH:FFT:PEAKSTable:DISPlay

Set → / → Query

Description	Query or set the peak display of FFT function.	
Syntax	:MATH:FFT:PEAKSTable:DISPlay {ON|OFF|<NR1>} :MATH:FFT:PEAKSTable:DISPlay?	
Parameter	OFF	Disable peak display function.
	ON	Enable peak display function.
	<NR1>	0 is to disable this function; other values to enable this function.
Example	:MATH:FFT:PEAKSTable:DISPlay ON Set FFT peak display to ON	

:MATH:FFT:PEAKSTable: NUM

Set → / → Query

Description	Set or query the number of peak display for FFT function.	
Syntax	:MATH:FFT:PEAKSTable:NUM <NR1> :MATH:FFT:PEAKSTable:NUM?	
Parameter	<NR1>	Range is 1-15.
Example	:MATH:FFT:PEAKSTable:NUM 15 Set FFT peak display count to 5	

:MATH:FFT:PEAKSTable:THReshol

Set → / → Query

Description	Set or query FFT function peak threshold.	
Syntax	:MATH:FFT:PEAKSTable:THReshold<NR3> :MATH:FFT:PEAKSTable:THReshold?	
Parameter	<NR3>	Unit: V, db, rad; Maximum value is the current vertical position*5.
Example	:MATH:FFT:PEAKSTable:THReshold 1 Set FFT peak threshold to 1	

:MATH:FFT:PEAKSTable:ORDer

Set → / → Query

Description	Query or set the peak display of FFT function.	
Syntax	:MATH:FFT:PEAKSTable:ORDer {AMPlitude|FREQuency} :MATH:FFT:PEAKSTable:ORDer?	
Parameter	AMPlitude	Sort by peak size.
	FREQuency	Sort by frequency size.
Example	:MATH:FFT:PEAKSTable:ORDer AMPlitude Set FFT peak sort method to AMPlitude	

:MATH:DEFine

Set → / → Query

Description	Sets or queries the advanced math expression as a string.	
Syntax	:MATH:DEFine {<string>| ?}	
Related	:MATH:DISP :MATH:TYPe	
Parameter	<string>	An expression enclosed in double quotes. Note that ensure parentheses are used correctly in the expression. The expression can contain the following parts:

Source	CH1~CH4, Ref1~Ref4
Function	Intg(, Diff(, log(, ln(, Exp(, Sqrt(, Abs(, Rad(, Deg(, sin(, cos(, tan(, asin(, acos(, atan(
Variable	VAR1, VAR2
Operator	+, -, *, /, (,), !(, <, >, <=, >=, ==, !=, ||, &&
Figure	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., E

		Measure-ment	Pk-Pk(, Max(, Min(, Amp(, High(, Low(, Mean(, CycleMean(, RMS(, CycleRMS(, Area(, CycleArea(, ROVShoot(, FOVShoot(, Freq(, Period(, Rise(, Fall(, PosWidth(, NegWidth(, Dutycycle(, FRR(, FRF(, FFR(, FFF(, LRR(, LRF(, LFR(, LFF(, Phase(
Return parameter	Returns the expression as a string.		
Example	:MATH:DISP ON :MATH:TYPe ADVanced MATH:DEFine “CH1+ CH2” Sets the math expression to CH1+CH2.		

:MATH:LABel

Set → / → Query

Description	Set or query FFT function’s label.	
Syntax	:MATH:LABel <QString> :MATH:LABel?	
Parameter	<NR3>	Unit is Hz, scientific notation.
Return parameter		
Example	:MATH:LABel “abc” Set FFT label name to abc	

:MATH:LABel:DISPlay

Set → / → Query

Description	Sets or returns the waveform label for MATH on/off.
Syntax	:MATH:LABel:DISPlay {OFF|ON} :MATH:LABel:DISPlay?

Related Commands	:MATH:LABel
Related Commands Example	:MATH:LABel "MATH1" :MATH:LABel? MATH1

:MATH:ADVanced:POSition

Set → Query

Description	Sets the vertical position of the advanced math result, expressed in unit/div.	
Syntax	MATH:ADVanced:POSition { <NRf> | ? }	
Parameter	<NRf>	Vertical position: -12e+0 to +12e+0 (12 units/division to +12 units/division.)
Return parameter	<NR3>	Returns the vertical position.
Example	:MATH:ADVanced:POSition 1.0e+0 Sets the position as 1.00 unit/div.	

:MATH:ADVanced:SCALe

Set → Query

Description	Sets or queries the vertical scale the advanced math result.	
Syntax	:MATH:ADVanced:SCALe {<NRf> | ?}	
Parameter	<NRf>	Vertical scale
Return parameter	<NR3>	Returns the vertical scale.
Example	:MATH:ADVanced:SCALe 2.0E-3 Sets the vertical scale to 2mV/Div.	

Cursor Commands

:CURSor:MODe

Set → / → Query

Description	Sets cursor mode to horizontal (H) or horizontal and vertical (HV).	
Note	When the cursor source is set to bus, then only the horizontal cursor is available.	
Syntax	:CURSor:MODe {OFF | H | HV | V |? }	
Parameter	OFF	Turns the cursors off.
	H	Turns the horizontal cursors on.
	HV	Turns horizontal and vertical cursors on.
	V	Turns vertical cursors on
Return parameter	Returns the state of the cursors (H, HV, OFF).	
Example	:CURSor:MODe OFF Turns the cursors off.	

:CURSor:SOURce

Set → / → Query

Description	Sets or queries the cursor source.	
Syntax	:CURSor:SOURce {CH1 | CH2 | CH3 | CH4 | MATH | FFT | AUTO |?}	
Parameter	CH1~CH4	Channel 1 to 4
	MATH	Math source
	FFT	Cursor source is selected as FFT.
	AUTO	Cursor source selection follows the channel.
Return parameter	Returns the cursor source.	
Example	:CURSor:SOURce CH1 Turns the cursor source as channel 1.	

:CURSor:HUNI

Set → / → Query

Description	Sets or queries the units for the horizontal bar cursors.	
Syntax	:CURSor:HUNI {SEConds | HERtz | DEGrees | PERcent | ?}	
Related Commands	:CURSor:MODe	
Parameter	SEConds	Sets the cursor units to time in seconds.
	HERtz	Sets the cursor units to frequency.
	DEGrees	Sets the cursor units to degrees.
	PERcent	Sets the cursor units to percent.
Return parameter	Returns the unit type.	
Example	:CURSor:HUNI SEConds Sets the units to time in seconds.	

:CURSor:HUSE

Set →

Description	Sets the current cursor position as the phase or ratio reference for the Percent cursors.	
Note	This command can only be used when :CURSor:HUNI is set to PERcent.	
Syntax	:CURSor:HUSE {CURRent}	
Related Commands	:CURSor:MODe :CURSor:HUNI	
Parameter	CURRent	Uses the current horizontal position
Example	:CURSor:HUSE CURRent.	

:CURSor:VUNI

Set →
→ Query

Description	Sets or queries the units for the vertical bar cursors.	
Syntax	:CURSor:VUNI {BASE | PERcent | ?}	
Related Commands	:CURSor:MODe	
Parameter	BASE	Sets the vertical cursor units the same as the scope units (V or A).
	PERcent	Sets the displayed units to percent.
Return parameter	Returns the unit type.	
Example	:CURSor:VUNI BASE Sets the units to the base units.	

:CURSor:VUSE

Set →

Description	Sets the current cursor position as the ratio reference for the Percent (vertical) cursors.
Note	This command can only be used when :CURSor:VUNI is set to PERcent.

Syntax	:CURSor:VUSE {CURRent}	
Related Commands	:CURSor:MODe :CURSor:VUNI	
Parameter	CURRent	Uses the current vertical position
Example	:CURSor:VUSE CURRent.	

:CURSor:H1Position

Set → Query

Description	Sets or returns the first horizontal cursor (H1) position.	
Syntax	:CURSor:H1Position {<NRf>| ?}	
Related Commands	:CURSor:H2Position	
Parameter	<NRf>	Horizontal position
Return parameter	Returns the cursor position.	
Example	:CURSor:H1Position? -1.34E-3 Returns the H1 cursor position as -1.34ms.	

:CURSor:H2Position

Set → Query

Description	Sets or returns the second horizontal cursor (H2) position.	
Syntax	:CURSor:H2Position {<NRf> | ?}	
Related Commands	:CURSor:H1Position	
Parameter	<NRf>	Horizontal Position
Return parameter	Returns the cursor position.	
Example	:CURSor:H2Position 1.5E-3 Sets the H2 cursor position to 1.5ms.	

:CURSor:HDELta → Query

Description	Returns the delta of H1 and H2.	
Syntax	:CURSor:HDELta{?}	
Return Parameter	<NR3>	Returns the distance between two horizontal cursors.
Example	:CURSor:HDELta? 5.0E-9 Returns the horizontal delta as 5ns.	

:CURSor:V1Position

Set → / → Query

Description	Sets the first vertical cursor (V1) position.	
Syntax	:CURSor:V1Position {<NRf>| ?}	
Parameter	<NRf>	Vertical position. Depends on the vertical scale.
Return parameter	<NR3>	Returns the cursor position.
Example	:CURSor:V1Position 1.6E -1 Sets the V1 cursor position to 160mA.	

:CURSor:AREA

Set → / → Query

Description	Query or set the cursor waveform area.	
Syntax	:CURSor:AREA {MAIN|ZOOM|XY|FFT|EXPANsion} :CURSor:AREA?	
⚠ Note	After enabling the XY|FFT|ZOOM function, it can be set. If there is only one waveform area, it can only be MAIN; subsequent basic commands need to determine the area to which the current waveform area belongs and return the cursor information corresponding to the waveform area.	
Parameter	MAIN	Set the waveform area as the main waveform area.
	ZOOM	Set the waveform area as ZOOM (requires ZOOM to be enabled).
	XY	Set the waveform area as XY (requires XY to be enabled).
	FFT	Set the waveform area to FFT (requires FFT to be enabled).
	EXPANsion	Set to the extended area, i.e., in ZOOM mode set to the ZOOM window, in FFT mode set to the FFT window, and in XY mode set to the XY window.

Example	:CURSor:AREA MAIN Set cursor waveform area to MIAN.

:CURSor:V2Position

Set →
→ Query

Description	Sets the first vertical cursor (V2) position.	
Syntax	:CURSor:V2Position {<NRf> | ?}	
Parameter	<NRf>	Vertical position. Depends on the vertical scale.
Return parameter	<NR3>	Returns the cursor position.
Example	:CURSor:V2Position 1.1E-1 Sets the V2 cursor position to 110mA.	

:CURSor:VDELta

→ Query

Description	Returns the delta of V1 and V2.	
Syntax	:CURSor:VDELta{?}	
Return Parameter	<NR3>	Returns the difference between two vertical cursors.
Example	:CURSor:VDELta? 4.00E+0 Returns the vertical delta as 4 volts.	

:CURSor:TIMe:TYPe

Set →
→ Query

Description	Set or query automatic cursor toggle.	
Syntax	:CURSor:TIME:TYPE {MANual|AUTO} :CURSor:TIME:TYPE?	
Parameter	MANual	Set cursor mode to manual.
	AUTO	Set cursor mode to automatic.

Example	:CURSor:TIME:TYPE AUTO Set cursor mode to automatic.

:CURSor:XY:RECTangular:X:UNIts → Query

Description	Query returns the X module unit of Rectangular module in XY mode.
Syntax	:CURSor:XY:RECTangular:X:UNIts?
Example	:CURSor:XY:RECTangular:X:UNIts? Query the X module unit of Rectangular module in XY mode

:CURSor:XY:RECTangular:X:POSition<X> Set → / → Query

Description	Sets or queries the horizontal position in XY mode for the X rectangular coordinates for cursor 1 or 2.	
Syntax	:CURSor:XY:RECTangular:X:POSition<X> {<NRf>|?}	
Parameter	<X>	Cursor 1, 2
	<NRf>	Horizontal position co-ordinates
Return parameter	<NR3>	Returns the cursor position.
Example	:CURSor:XY:RECTangular:X:POSition1 4.0E-3 Sets the X-coordinate cursor 1 position to 40mV/mV.	

:CURSor:XY:RECTangular:X:DELta → Query

Description	Returns the delta value of cursor 1 and 2 on the X coordinate.	
Syntax	:CURSor:XY:RECTangular:X:DELta{?}	
Return Parameter	<NR3>	Returns the delta value of cursor 1 and 2 as <NR3>.

Example	:CURSor:XY:RECTangular:X:DELta? 80.0E-3 Returns the horizontal delta as 80mV.

:CURSor:XY:RECTangular:Y:UNIts → Query

Description	Query returns the Y module unit of Rectangular module in XY mode.
Syntax	:CURSor:XY:RECTangular:Y:UNIts?
Example	:CURSor:XY:RECTangular:Y:UNIts? Query the Y module unit of Rectangular module in XY mode.

:CURSor:XY:RECTangular:Y:POSition<X> Set → / → Query

Description	Sets or queries the vertical position in XY mode for the Y rectangular coordinates for cursor 1 or 2.	
Syntax	:CURSor:XY:RECTangular:Y:POSition<X> {<NRf>|?}	
Parameter	<X>	Cursor 1, 2
	<NRf>	Vertical position co-ordinates
Return parameter	<NR3>	Returns the cursor position.
Example	:CURSor:XY:RECTangular:Y:POSition1 4.0E-3 Sets the Y-coordinate cursor 1 position to 40mV/mV.	

:CURSor:XY:RECTangular:Y:DELta → Query

Description	Returns the delta value of cursor 1 and 2 on the Y coordinate.	
Syntax	:CURSor:XY:RECTangular:Y:DELta{?}	
Return Parameter	<NR3>	Returns the delta value of cursor 1 and 2 as <NR3>.

Example	:CURSor:XY:RECTangular:Y:DELta? 80.0E-3 Returns the horizontal delta as 80mV.

:CURSor:XY:POLar:RADIUS:UNIts → Query

Description	Query retrieves the unit of r in the Polar module in XY mode.
Syntax	:CURSor:XY:POLar:RADIUS:UNIts?
Example	:CURSor:XY:POLar:RADIUS:UNIts? Query the unit of r in the Polar module in XY mode.

:CURSor:XY:POLar:RADIUS:POSition<X> → Query

Description	Queries the polar radius position for the specified cursor in XY mode, where X can be either cursor 1 or 2.	
Syntax	:CURSor:XY:POLar:RADIUS:POSition<X>{?}	
Parameter	<X>	1, 2 (cursor 1, cursor 2)
Return Parameter	<NR3>	Returns the polar radius position.
Example	:CURSor:XY:POLar:RADIUS:POSition1? 80.0E-3 Returns the polar radius position as 80.0mV.	

:CURSor:XY:POLar:RADIUS:DELta → Query

Description	Returns the radius delta value of cursor 1 and 2.	
Syntax	:CURSor:XY:POLar:RADIUS:DELta{?}	
Return Parameter	<NR3>	Returns the radius delta.

Example	:CURSor:XY:POLar:RADIUS:DELta? 31.4E-3 Returns the radius delta as 31.4mV.

:CURSor:XY:POLar:THETA:UNIts → Query

Description	Query returns the unit of θ in the Polar module in XY mode.
Syntax	:CURSor:XY:POLar:THETA:UNIts?
Example	:CURSor:XY:POLar:THETA:UNIts? Query the unit of θ in the Polar module in XY mode

:CURSor:XY:POLar:THETA:POSition<X> → Query

Description	Queries the polar angle for the specified cursor in XY mode, where X can be either 1 or 2.	
Syntax	:CURSor:XY:POLar:THETA:POSition<X>{?}	
Parameter	<X>	1, 2 (Cursor 1, Cursor 2)
Return parameter	<NR3>	Returns the polar angle.
Example	:CURSor:XY:POLAR:RADIUS:POSition1? 8.91E+1 Returns the polar angle for cursor1 as 89.1˚.	

:CURSor:XY:POLar:THETA:DELta → Query

Description	Queries the polar angle delta between cursor1 and cursor2.	
Syntax	:CURSor:XY:POLar:THETA:DELta{?}	
Return parameter	<NR3>	Returns the theta delta between cursor1 and cursor2.

Example	:CURSor:XY:POLar:THETA:DELta? 9.10E+0 Returns the delta as 9.1˚.

:CURSor:XY:PRODUCT:UNIts → Query

Description	Query returns the unit of Product module in XY mode.
Syntax	:CURSor:XY:PRODUCT:UNIts?
Example	:CURSor:XY:PRODUCT:UNIts? Query the unit of Product module in XY mode.

:CURSor:XY:PRODuct:POSition<X> → Query

Description	Queries the product in XY mode for the specified cursor, where x can be either 1 or 2.	
Syntax	:CURSor:XY:PRODuct:POSition<X>{?}	
Parameter	<X>	1, 2 (Cursor 1, Cursor 2)
Return parameter	<NR3>	Returns the product value of the Cursor1 or Cursor2.
Example	:CURSor:XY:PRODuct:POSition1? 9.44E-5 Returns the product of cursor1 as 94.4uVV.	

:CURSor:XY:PRODuct:DELta → Query

Description	Queries the product delta in XY mode.	
Syntax	:CURSor:XY:PRODuct:DELta{?}	
Return parameter	<NR3>	Returns the product delta.
Example	:CURSor:XY:PRODuct:DELta? 1.22E-5 Returns the product delta as 12.2uVV.	

:CURSor:XY:PRODuct:UNIts → Query

Description	Query returns the unit of Product module in XY mode.
Syntax	:CURSor:XY:PRODUCT:UNIts?
Example	:CURSor:XY:PRODUCT:UNIts? Query the unit of Product module in XY mode

:CURSor:XY:RATio:POSition<X> → Query

Description	Queries the ratio in XY mode for the specified cursor, where x can be either cursor 1 or 2.	
Syntax	:CURSor:XY:RATio:POSition<X>{?}	
Parameter	<X>	1, 2 (Cursor 1, Cursor 2)
Return parameter	<NR3>	Returns the ratio.
Example	:CURSor:XY:RATio:POSition? 6.717E+1 Returns the ratio value as 6.717V/V.	

:CURSor:XY:RATio:UNIts → Query

Description	Query returns the unit of Ratio module in XY mode.
Syntax	:CURSor:XY:RATio:UNIts?
Example	:CURSor:XY:RATio:UNIts? Query the unit of Ratio module in XY mode.

:CURSor:HTRACking → Set / → Query

Description	Sets or queries the state of horizental cursor track.
Syntax	:CURSor:HTRACking {ON|OFF} :CURSor:HTRACking?

Example	:CURSor:HTRACking ON :CURSor:HTRACking? ON

:CURSor:VTRACking

Set → / → Query

Description	Sets or queries the state of vertical cursor track.
Syntax	:CURSor:VTRACking {ON|OFF} :CURSor:VTRACking?
Example	:CURSor:VTRACking ON :CURSor:VTRACking? ON

:CURSor:XY:RATio:DELta

→ Query

Description	Queries the ratio delta in XY mode.
Syntax	:CURSor:XY:RATio:DELta{?}
Return parameter	<NR3> Returns the ratio delta.
Example	:CURSor:XY:RATio:DELta? 5.39E+1 Returns the ratio delta as 53.9V/V.

Display Commands

:DISPlay:INTensity:WAVEform

Set → / → Query

Description	Sets or queries the waveform intensity level.	
Syntax	:DISPlay:INTensity:WAVEform {<NRf> | ?}	
Parameter	<NRf>	0.0E+0 to 1.0E+2 (0% to 100%)
Return Parameter	<NR3>	Returns the intensity.
Example	:DISPlay:INTensity:WAVEform 5.0E+1 Sets the waveform intensity to 50%.	

:DISPlay:INTensity:GRATicule

Set → / → Query

Description	Sets or queries the graticule intensity level.	
Syntax	:DISPlay:INTensity:GRATicule {<NRf> | ?}	
Parameter	<NRf>	1.0E+0 to 1.0E+2 (10% to 100%)
Return Parameter	<NR3>	Returns the graticule intensity.
Example	:DISPlay:INTensity:GRATicule 5.0E+1 Sets the graticule intensity to 50%.	

:DISPlay:INTensity:BACKLight

Set → / → Query

Description	Sets or queries the intensity of the backlight display.	
Syntax	:DISPlay:INTensity:BACKLight {<NRf> | ?}	
Parameter	<NRf>	1.0E+0 to 1.0E+2 (10% to 100%)
Return Parameter	<NR3>	Returns the backlight intensity.
Example	:DISPlay:INTensity:BACKLight 5.0E+1 Sets the backlight intensity to 50%.	

:DISPlay:INTENSITy:BACKLight:AUTODim :TIMe

Set → / → Query

Description	Sets or queries the display auto-dim time.	
Syntax	:DISPlay:INTensity:BACKLight:AUTODim:TIMe { <NR1> | OFF | ? }	
Parameter/ Return parameter	OFF	Turn off the auto-dim time
	<NR1>	1 ~ 180 minutes. Time in minutes.
Example	:DISPlay:INTensity:BACKLight:AUTODim:TIMe 10 Sets the auto-dim time to 10 minutes.	

:DISPlay:PERSistence

Set → / → Query

Description	Sets or queries the waveform persistence level.	
Syntax	:DISPlay:PERSistence { INFInite | OFF | <NRf> | ? }	
Parameter	<NRf>	1.6E-2 ~ 4.0E+0. (16mS to 10S) Range(1.6E-2, 30E-3, 60E-3, 120E-2, 240E-3, 500E-3, 750E-3, 1, 1.5,2,...,9.5,10
	INFInite	Infinite persistence
	OFF	No persistence
Return Parameter	<NR3>	Returns the persistence time.
	INFInite	Infinite persistence
	OFF	No persistence
Example	:DISPlay:PERSistence 2.0E+0 Sets the persistence to 2 seconds.	

:DISPlay:GRATicule

Set → / → Query

Description	Sets or queries graticule display type.
Syntax	:DISPlay:GRATicule {FULL | GRID|CROSs | FRAMe | ?}
Parameter	FULL  CROSs  FRAMe  GRID 
Return parameter	Returns the graticule type.
Example	:DISPlay:GRATicule FULL Sets the graticule to  .

:DISPlay:WAVEform

Set → / → Query

Description	Sets or queries whether the waveforms are drawn as vectors or dots.
Syntax	:DISPlay:WAVEform {VECTor | DOT | ?}
Parameter	VECTor Vectors DOT Dots
Return parameter	Returns VECTOR or DOT.
Example	:DISPlay:WAVEform VECTor Sets the waveform to vectors.

:DISPlay:TRANSREADouts

Set → / → Query

Description	Sets or queries the state of transparent display.
Syntax	:DISPlay:TRANSREADouts {ON|OFF} :DISPlay:TRANSREADouts?
Parameter	ON Turns on the transparent display.

	OFF	Turns off the transparent display.
Example	:DISPlay:TRANSREADouts ON :DISPlay:TRANSREADouts? ON	

:DISPlay:WAVEform:COLor

Set → / → Query

Description	Sets or queries the waveform color display format.	
Syntax	:DISPlay:WAVEform:COLor {GRAYscale | COLor | ?}	
Parameter	GRAYscale	Sets waveform display as grayscale
	COLor	Sets waveform display as color
Return parameter	Returns GRAYscale or COLor.	
Example	:DISPlay:WAVEform:COLor GRAYscale Sets the waveform to grayscale.	

Measure Commands

:MEASure:GATing

Set → / → Query

Description	Sets or queries the measurement gating.	
Syntax	:MEASure:GATing { OFF | SCREen | CURSor | ? }	
Parameter	OFF	Full record
	SCREen	Gating set to screen width
	CURSor	Gating between cursors
Return parameter	Returns the gating. (OFF, SCREEN, CURSOR)	
Example	:MEASure:GATing OFF Turns gating off (full record).	

:MEASure:SOURce

Set → / → Query

Description	Sets or queries the measurement source for source1 or source2.	
Syntax	:MEASure:SOURce<X> { CH1 | CH2| CH3 | CH4 | ? }	
Parameter	<X>	Source1 or source2
	CH1~CH4	Channel 1 to 4
Return parameter	Returns the source (CH1, CH2, CH3, CH4)	
Example	:MEASure:SOURce1 CH1 Sets source1 to channel 1.	

:MEASure:METHod

Set → / → Query

Description	Sets or queries the method used to determine the High-Low measurement values.
Syntax	:MEASure:METHod { AUTo | HIStogram | MINMax | ? }

Parameter	AUTo	Set to auto.
	HIStogram	Set to the Histogram method.
	MINMax	Set to the Min-Max method.
Return parameter	Returns the measurement method (AUTO, HISTOGRAM, MINMAX)	
Example	:MEASure:METHod: AUTo Set the measurement method to auto.	

Set →
:MEASUrement:REFLevel:PERCent:HIGH → Query

Description	Sets or queries the high reference level as a percentage.
Syntax	:MEASUrement:REFLevel:PERCent:HIGH {<NRf> | ?}
Parameter	<NRf> 0 - 100%
Return parameter	Returns the high reference level
Example	:MEASUrement:REFLevel:PERCent:HIGH 50.1 Set the high reference level to 50.1%.

Set →
:MEASUrement:REFLevel:PERCent:LOW → Query

Description	Sets or queries the low reference level as a percentage.
Syntax	:MEASUrement:REFLevel:PERCent:LOW {<NRf> | ?}
Parameter	<NRf> 0 - 100%
Return parameter	Returns the low reference level.
Example	:MEASUrement:REFLevel:PERCent:LOW 40.1 Set the low reference level to 40.1%.

:MEASUrement:REFLevel:PERCent:MID

Set → / → Query

Description	Sets or queries the first mid reference level as a percentage.
Syntax	:MEASUrement:REFLevel:PERCent:MID {<NRf> | ?}
Parameter	<NRf> 0 - 100%
Return parameter	Returns the mid reference level.
Example	:MEASUrement:REFLevel:PERCent:MID 50 Set the mid reference level to 50%.

:MEASure:FALL

→ Query

Description	Returns the fall time measurement result.
Syntax	:MEASure:FALL{?}
Related Commands	:MEASure:SOURce<X>
Return parameter	<NR3> Chan Off Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.
Example	:MEASure:SOURce1 CH1 :MEASure:FALL? Selects Channel 1 as the source, and then measures the fall time.

:MEASure:FREQuency → Query

Description	Returns the frequency value.	
Syntax	:MEASure:FREQuency{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the frequency in Hz.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:FREQuency? >1.0E+3 Selects Channel 1, and then measures the frequency.	

:MEASure:NWIDth → Query

Description	Returns the first negative pulse width timing.	
Syntax	:MEASure:NWIDth{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the negative pulse width in seconds.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:NWIDth? 4.995E-04	

Selects Channel 1, and then measures the negative pulse width.

:MEASure:PDUTy → Query

Description	Returns the positive duty cycle ratio as percentage.	
Syntax	:MEASure:PDUTy{?}	
Related commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the positive duty ratio.
	Chan Off	Indicates the source channel is not activated.
⚠ Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:PDUTy? 5.000E+01 Selects Channel 1, and then measures the positive duty cycle.	

:MEASure:PERiod → Query

Description	Returns the period.	
Syntax	:MEASure:PERiod{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the period.
	Chan Off	Indicates the source channel is not activated.
⚠ Note	Before using this command, select the measurement channel. See the example below.	

Example	:MEASure:SOURce1 CH1 :MEASure:PERiod? 1.0E-3 Selects Channel 1, and then measures the period.

:MEASure:PWIDth → Query

Description	Returns the first positive pulse width.	
Syntax	:MEASure:PWIDth{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the positive pulse width.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:PWIDth? 5.0E-6 Selects Channel 1, and then measures the positive pulse width.	

:MEASure:RISe → Query

Description	Returns the first pulse rise time.	
Syntax	:MEASure:RISe{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the rise time.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	

Example	:MEASure:SOURce1 CH1 :MEASure:RISe? 8.5E-6 Selects Channel 1, and then measures the rise time.

:MEASure:ROVShoot → Query

Description	Returns the rising overshoot over the entire waveform in percentage.	
Syntax	:MEASure:ROVShoot{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the overshoot.
	Chan Off	Indicates the source channel is not activated.
⚠ Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:ROVShoot? 5.00E+00 Selects Channel 1, and then measures the rise overshoot.	

:MEASure:RPReshoot → Query

Description	Returns rising preshoot over the entire waveform in percentage.	
Syntax	:MEASure:RPReshoot{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the rising preshoot.

	Chan Off	Indicates the source channel is not activated.
⚠Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:RPReshoot? 2.13E-2 Selects Channel 1, and then measures the rise preshoot.	

:MEASure:PPULSE → Query

Description	Returns the number of positive pulses.	
Syntax	:MEASure:PPULSE{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the number of positive pulses.
	Chan Off	Indicates the source channel is not activated.
⚠Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:PPULSE? 6.000E+00 Selects Channel 1, and then measures the number of positive pulses.	

:MEASure:NPULSE → Query

Description	Returns the number of negative pulses.
Syntax	:MEASure:NPULSE{?}
Related Commands	:MEASure:SOURce<X>

Return parameter	<NR3>	Returns the number of negative pulses.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:NPULSE? 4.000E+00 Selects Channel 1, and then measures the number of negative pulses.	

:MEASure:PEDGE → Query

Description	Returns the number of positive edges.	
Syntax	:MEASure:PEDGE{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the number of positive edges.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:PEDGE? 1.100E+01 Selects Channel 1, and then measures the number of positive edges.	

:MEASure:NEDGE → Query

Description	Returns the number of negative edges.
Syntax	:MEASure:NEDGE{?}

Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the number of negative edges.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:NEDGE? 1.100E+01 Selects Channel 1, and then measures the number of negative edges.	

:MEASure:AMPlitude → Query

Description	Returns the amplitude difference between the Vhigh-Vlow.	
Syntax	:MEASure:AMPlitude{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the amplitude.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:AMPlitude? 3.76E-3 Selects Channel 1, and then measures the amplitude.	

:MEASure:MEAN → Query

Description	Returns the mean voltage/current of one or more full periods.	
Syntax	:MEASure:MEAN{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the mean.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:MEAN? 1.82E-3 Selects Channel 1, and then measures the mean value.	

:MEASure:CMEan → Query

Description	Returns the mean voltage/current of one full period.	
Syntax	:MEASure:CMEan{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the cyclic mean.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	

Example	:MEASure:SOURce1 CH1 :MEASure:CMEan? 9.480E-01 Selects Channel 1, and then measures the mean value of the first period.

:MEASure:HIGH → Query

Description	Returns the global high voltage/current.	
Syntax	:MEASure:HIGH{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the high value.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:HIGH? 3.68E-3 Selects Channel 1, and then measures the high voltage/current.	

:MEASure:LOW → Query

Description	Returns the global low voltage/current.	
Syntax	:MEASure:LOW{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the global low value.
	Chan Off	Indicates the source channel is not activated.

⚠ Note	Before using this command, select the measurement channel. See the example below.
Example	:MEASure:SOURce1 CH1 :MEASure:LOW? 1.00E-0 Selects Channel 1, and then measures the low current/voltage.

:MEASure:MAX → Query

Description	Returns the maximum amplitude.	
Syntax	:MEASure:MAX{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the maximum amplitude.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:MAX? 1.90E-3 Selects Channel 1, and then measures the maximum amplitude.	

:MEASure:MIN → Query

Description	Returns the minimum amplitude.	
Syntax	:MEASure:MIN{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the minimum amplitude.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:MIN? -8.00E-3	

Selects Channel 1, and then measures the minimum amplitude.

:MEASure:PK2PK → Query

Description	Returns the peak-to-peak amplitude (difference between maximum and minimum amplitude).	
Syntax	:MEASure:PK2Pk{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the voltage or current peak to peak measurement.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:PK2Pk? 2.04E-1 Selects Channel 1, and then measures the peak-to-peak amplitude.	

:MEASure:RMS → Query

Description	Returns the root-mean-square voltage/current of one or more full periods.	
Syntax	:MEASure:RMS{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the RMS value.
	Chan Off	Indicates the source channel is not activated.

Note	Before using this command, select the measurement channel. See the example below.
Example	:MEASure:SOURce1 CH1 :MEASure:RMS? 1.31E-3 Selects Channel 1, and then measures the RMS voltage/current.

:MEASure:CRMS → Query

Description	Returns the root-mean-square voltage/current of one full periods.	
Syntax	:MEASure:CRMS{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the CRMS value.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:CRMS? 1.31E-3 Selects Channel 1, and then measures the CRMS voltage/current.	

:MEASure:AREa → Query

Description	Returns the voltage/current area over one or more full periods.
Syntax	:MEASure:AREa{?}
Related Commands	:MEASure:SOURce<X>

Return parameter	<NR3>	Returns the area value.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:AREa? 1.958E-03 Selects Channel 1, and then measures the area.	

:MEASure:CAREa → Query

Description	Returns the voltage/current area over one full period.	
Syntax	:MEASure:CAREa{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the area value.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:CAREa? 1.958E-03 Selects Channel 1, and then measures the area.	

:MEASure:FRRDelay → Query

Description	Returns the delay between the first rising edge of source1 and the first rising edge of source2.
Syntax	:MEASure:FRRDelay{?}

Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:FRRDelay? -4.68E-6 Select channel 1 and 2 as source1/2, and then measure FRR.	

:MEASure:FRFDelay → Query

Description	Returns the delay between the first rising edge of source1 and the first falling edge of source2.	
Syntax	:MEASure:FRFDelay{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:FRFDelay? 3.43E-6 Select channel 1 and 2 as source1/2, and then measures FRF.	

:MEASure:FFRDelay → Query

Description	Returns the delay between the first falling edge of source1 and the first rising edge of source2.	
Syntax	:MEASure:FRRDelay{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
⚠ Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:FRRDelay? -8.56E-6 Select channel 1 and 2 as delay source1/2, and then measure FFR.	

:MEASure:FFFDelay → Query

Description	Returns the delay between the first falling edge of source1 and the first falling edge of source2.	
Syntax	:MEASure:FFFDelay{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
⚠ Note	Select the two source channels before entering this command.	

Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:FFFDelay? -8.89E-6 Select channel 1 and 2 as delay source1/2, and then measure FFF.

:MEASure:LRRDelay → Query

Description	Returns the delay between the first rising edge of source1 and the last rising edge of source2.	
Syntax	:MEASure:LRRDelay{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:LRRDelay? -8.89E-6 Select channel 1 and 2 as delay source1/2, and then measure LRR.	

:MEASure:LRFDelay → Query

Description	Returns the delay between the first rising edge of source1 and the last rising edge of source2.
Syntax	:MEASure:LRFDelay{?}
Related Commands	:MEASure:SOURce<X>

Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
⚠ Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:LRFDelay? -4.99E-6 Select channel 1 and 2 as delay source1/2, and then measure LRF.	

:MEASure:LFRDelay → Query

Description	Returns the delay between the first falling edge of source1 and the last rising edge of source2.	
Syntax	:MEASure:LFRDelay{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:LFRDelay? -9.99E-6 Select channel 1 and 2 as delay source1/2, and then measure LFR.	

:MEASure:LFFDelay → Query

Description	Returns the delay between the first falling edge of source1 and the last falling edge of source2.	
Syntax	:MEASure:LFFDelay{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	

Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:LFFDelay? -9.99E-6 Select channel 1 and 2 as delay source1/2, and then measure LFF.

:MEASure:PHAse

→ Query

Description	Returns the phase between source 1 and source 2.	
Syntax	:MEASure:PHAse{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the phase difference.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:PHAse? 4.50E+01 Select channel 1 and 2 as phase source1/2, and then measure the phase in degrees.	

Measurement Commands

:MEASUrement:MEAS<X>:SOURCE<X>

Set → / → Query

Description	Sets or queries the measurement source for a selected automatic measurement. This is a statistics related command.	
Syntax	:MEASUrement:MEAS<X>:SOURCE<X> { CH1 | CH2 | CH3 | CH4 | ? }	
Related commands	:MEASUrement:MEAS<X>:TYPe	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
	SOURCE<X>	SOURCE1: the source for all single channel measurements.
	SOURCE<X>	SOURCE2: the source for all delay or phase measurements.
	CH1 to CH4	Channel 1, 2, 3, 4
Return parameter	CH1 to CH4	Channel 1, 2, 3, 4
Example	:MEASUrement:MEAS1:SOURCE1? >CH1 Returns the (first) source for measurement 1.	

:MEASUrement:MEAS<X>:DELay

Set → / → Query

Description	Query measurement parameters for the specified index delay measurement.	
Syntax	MEASUrement:MEAS1:DELay?	
Parameter	<X>	Range is 1-8.

Example	MEASUrement:MEAS1:DELay? Query measurement parameters for the specified index 1 delay measurement

Set →
:MEASUrement:MEAS<X>:DELay:DIRection → Query

Description	Query or set the direction of the delay measurement for the specified index.	
Syntax	:MEASUrement:MEAS<x>:DELay:DIRection {BACKWards|FORWards} :MEASUrement:MEAS<x>:DELay:DIRection?	
Parameter	BACKWards	Searching from the end of the waveform and looking for the last rising or falling edge within the waveform. Use the: MEAS<x>:DELAY:EDGE<x> command to specify.
	FORWards	Searching from the beginning of the waveform, looking for the first rising or falling edge within the waveform. Use the: MEAS<x>:DELAY:EDGE<x> command to specify.
Example	:MEASUrement:MEAS1:DELay:DIRection FORWards Set the direction setting of delay measurement for the specified number 1 to FORWards.	

Set →
:MEASUrement:MEAS<X>:DELay:EDGE<x> → Query

Description	Query or set the edge type for the specified sequence number delay measurement.	
Syntax	:MEASUrement:MEAS<x>:DELay:EDGE<x> {FALL|RISe} :MEASUrement:MEAS<x>:DELay:EDGE<x>?	
Parameter	FALL	

	RISe	
	X	Range of 1-2. 1 indicates from waveform; 2 indicates to waveform.
Example	:MEASUrement:MEAS1:DELay:EDGE1 RISe Set the edge type of the delay measurement for the specified number 1 to RISe.	

:MEASUrement:MEAS<X>:TYPe

Set → Query

Description	Sets or queries the measurement type for a selected automatic measurement. This is a statistics related command.
Syntax	:MEASUrement:MEAS<X>:TYPe {PK2pk | MAXimum | MINImum | AMPlitude | HIGH | LOW | MEAN | CMEan | RMS | CRMs | AREa | CAREa | ROVShoot | FOVShoot | RPReshoot | FPReshoot | FREQuency | PERIod | RISe | FALL | PWIdth | NWIdth | PDUTy | NDUTy | PPULSE | NPULSE | PEDGE | NEDGE | FRRDelay | FRFDelay | FFRDelay | FFFDelay | LRRDelay | LRFDelay | LFRDelay | LFFDelay | PHAse | ?}
Related commands	:MEASUrement:MEAS<X>:SOURCE<X>
Parameter	MEAS<X> The automatic measurement number from 1 to 8.
Return parameter	Returns the measurement type
Example	:MEASUrement:MEAS1:TYPe RMS Sets measurement 1 to RMS measurement.

:MEASUrement:MEAS<X>:STATE

Set → Query

Description	Sets or queries the state of a selected measurement. This is a statistics related command.
Syntax	:MEASUrement:MEAS<X>:STATE { ON | OFF | 1 | 0 | ? }

Related commands	:MEASUrement:MEAS<X>:SOUrce<X> :MEASUrement:MEAS<X>:TYPe	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
	ON/1	Turn the measurement on.
	OFF/0	Turn the measurement off.
Return parameter	0	Measurement is off.
	1	Measurement is on.
Example	:MEASUrement:MEAS1:STATE 1 Turns measurement 1 on.	

:MEASUrement:MEAS<X>:VALue → Query

Description	Returns the measurement results for the selected measurement. This is a statistics related command.	
Syntax	:MEASUrement:MEAS<X>:VALue?	
Related Commands	:MEASure:SOURce<X>	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
Return parameter	<NR3>	Returns the measurement for the selected measurement number.
Note	The measurement source(s), measurement number, measurement type and measurement state must first be set before a measurement result can be returned.	
Example	:MEASUrement:MEAS1:SOUrce1 CH1 :MEASUrement:MEAS1:TYPe PK2PK :MEASUrement:MEAS1:STATE ON :MEASUrement:MEAS1:VALue? 5.000E+0 Selects channel 1 as the source for measurement 1, sets measurement 1 to peak to peak measurement	

	and then turns on the measurement. The result returns the peak to peak measurement.

:MEASUrement:MEAS<X>:MAXimum → Query

Description	Returns the maximum measurement results for the selected measurement from the last time the statistics were reset. This is a statistics related command.	
Syntax	:MEASUrement:MEAS<X>:MAXimum?	
Related Commands	:MEASUrement:STATIstics:MODe	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
Return parameter	<NR3>	Returns the measurement for the selected measurement number.
Example	:MEASUrement:MEAS3:SOUrce1 CH1 :MEASUrement:MEAS3:TYPe PK2PK :MEASUrement:MEAS3:STATE ON :MEASUrement:STATIstics:MODe ON :MEASUrement:MEAS3:MAXimum? 2.800E-02 Returns the maximum measurement result for measurement number 3.	

:MEASUrement:MEAS<X>:MEAN → Query

Description	Returns the mean measurement results for the selected measurement from the last time the statistics were reset. This is a statistics related command.
Syntax	:MEASUrement:MEAS<X>:MEAN?
Related Commands	:MEASUrement:STATIstics:MODe

Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
Return parameter	<NR3>	Returns the measurement for the selected measurement number.
Example	:MEASUrement:MEAS3:SOUrce1 CH1 :MEASUrement:MEAS3:TYPe PK2PK :MEASUrement:MEAS3:STATE ON :MEASUrement:STATIstics:MODe ON :MEASUrement:MEAS3:MEAN? 2.090E-02 Returns the mean measurement result for measurement number 3.	

:MEASUrement:MEAS<X>:MINImum → Query

Description	Returns the minimum measurement results for the selected measurement from the last time the statistics were reset. This is a statistics related command.	
Syntax	:MEASUrement:MEAS<X>:MINImum?	
Related Commands	:MEASUrement:STATIstics:MODe	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
Return parameter	<NR3>	Returns the measurement for the selected measurement number.
Example	:MEASUrement:MEAS3:SOUrce1 CH1 :MEASUrement:MEAS3:TYPe PK2PK :MEASUrement:MEAS3:STATE ON :MEASUrement:STATIstics:MODe ON :MEASUrement:MEAS3:MINImum? 1.600E-02	

Returns the minimum measurement result for measurement number 3.

:MEASUrement:MEAS<X>:STDdev → Query

Description	Returns the standard deviation for the selected measurement from the last time the statistics were reset. This is a statistics related command.	
Syntax	:MEASUrement:MEAS<X>:STDdev?	
Related Commands	:MEASUrement:STATIstics:MODe	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
Return parameter	<NR3>	Returns the measurement for the selected measurement number.
Example	:MEASUrement:MEAS3:SOUrce1 CH1 :MEASUrement:MEAS3:TYPe PK2PK :MEASUrement:MEAS3:STATE ON :MEASUrement:STATIstics:MODe ON :MEASUrement:MEAS3:STDdev? 1.530E-03 Returns the standard deviation for measurement number 3.	

:MEASUrement:MEAS<X>:UNIts → Query

Description	Query unit of measurement for specified sequence number.	
Syntax	:MEASUrement:MEAS<X>:UNIts	
Parameter	X	Range from 1 to 8.
Example	:MEASUrement:MEAS1:UNIts? Query unit of measurement for specified sequence number 1	

:MEASUrement:STATIstics:MODe

Set → / → Query

Description	Puts the statics measurement results on the display or queries whether the statistics are displayed.	
Syntax	:MEASUrement:STATIstics:MODe {OFF | ON | ?}	
Related commands	:MEASUrement:STATIstics	
Parameter/ Return parameter	ON	Display the statistics on the screen.
	OFF	Remove the statistics from the screen
Example	:MEASUrement:STATIstics:MODe ON Displays statistics on the screen.	

:MEASUrement:STATIstics:WEIghting

Set → / → Query

Description	Sets and queries the number of samples (weighting) used for the statistics calculations.	
Syntax	:MEASUrement:STATIstics:WEIghting { <NR1> | ? }	
Parameter/ Return parameter	<NR1>	Number of samples (2~1000)
Example	:MEASUrement:STATIstics:WEIghting 5 Sets the number of samples to 5.	

:MEASUrement:INDICators:STAT

Set → / → Query

Description	Set or query the measurement indicator's state.	
Syntax	:MEASUrement:INDICators:STAT {OFF|MEAS<x>} :MEASUrement:INDICators:STAT?	
Parameter	OFF	Turn off the indicator.
	MEAS<x>	Set the indicator source. <x>:1~8.

Example	:MEASUrement:INDICators:STAT OFF :MEASUrement:INDICators:STAT? OFF :MEASUrement:INDICators:STAT MEAS2 :MEASUrement:INDICators:STAT? MEAS2

:MEASUrement:INDICators:HORZ<x>? → Query

Description	Query the position of measurement indicator's horizental track.	
Syntax	:MEASUrement:INDICators:HORZ<x>? {PRECise}	
Parameter	HORZ<x>	The horizental track. <x>:1 or 2.
	PRECise	Display more digit for the return value.
Example	:MEASUrement:INDICators:HORZ1? 3.120e+00 :MEASUrement:INDICators:HORZ1? PRECise 3.120000e+00	

:MEASUrement:INDICators:VERT<x>? → Query

Description	Query the position of measurement indicator's vertical track.	
Syntax	:MEASUrement:INDICators:VERT<x>? {PRECise}	
Parameter	VERT<x>	The vertical track. <x>:1 or 2.
	PRECise	Display more digit for the return value.
Example	:MEASUrement:INDICators:VERT1? -2.135e-02 :MEASUrement:INDICators:VERT1? PRECise -2.135000e-02	

:MEASUrement:INDICators:NUMHORZ? → Query

Description	Query the number of measurement indicator's horizental tracks currently being displayed.
Syntax	:MEASUrement:INDICators:NUMHORZ?
Example	:MEASUrement:INDICators:NUMHORZ? 2

:MEASUrement:INDICators:NUMVERT? → Query

Description	Query the number of measurement indicator's vertical tracks currently being displayed.
Syntax	:MEASUrement:INDICators:NUMVERT?
Example	:MEASUrement:INDICators:NUMVERT? 1

:MEASUrement:STATIstics Set →

Description	Resets the statics calculations. This command will clear all the currently accumulated measurements.
Syntax	:MEASUrement:STATIstics {RESET}

Reference Commands

:REF<X>:DISPlay

Set → / → Query

Description	Sets or queries whether a reference waveform will be shown on the display. A reference waveform must first be saved before this command can be used.	
Syntax	:REF<x>:DISPlay { OFF| ON| ? }	
Parameter	<X>	Reference waveform 1, 2, 3, 4.
	OFF	Turns the selected reference waveform off
	ON	Turns the selected reference waveform on
Return parameter	Returns the status of the selected reference waveform. (OFF, ON).	
Example	:REF1:DISPlay ON Turns on reference1 (REF 1) on the display.	

:REF<X>:OFFSet

Set → / → Query

Description	Sets or returns the selected reference waveform vertical position (offset).	
Syntax	:REF<X>:OFFSet { <NRf> | ?}	
Related commands	:REF<X>:DISPlay	
Parameter	<X>	Reference waveform 1, 2, 3, 4.
	<NRf>	Vertical offset
Return parameter	<NR3>	Returns the reference waveform vertical position.

Example	:REF1:OFFSet -5.000E-2 Selects reference 1, and then sets the vertical position to -50mV/mA.

:REF<x>:SCALe

Set →
→ Query

Description	Sets or returns the selected reference waveform vertical scale.	
Syntax	:REF<X>:SCALe { <NRf> | ? }	
Related commands	:REF<X>:DISPlay	
Parameter	<X>	Reference waveform 1, 2, 3, 4.
	<NRf>	Vertical scale
Return parameter	<NR3>	Returns the reference waveform vertical scale.
Example	:REF1:SCALe 5.000E-2 Selects reference 1, and then sets the vertical scale to 50mV|mA/div.	

:REF:STATe

Set →
→ Query

Description	Enable or disable the reference waveform function.	
Syntax	:REF:STATe { OFF | ON | ? }	
Parameter	OFF	Disable the Reference waveform function.
	ON	Enable the Reference waveform function
Return parameter	Returns the status of the reference waveform.	
Example	:REF:STATe ON Enable the reference waveform function.	

Run Command

:RUN

Set →

Description	The run command allows the oscilloscope to continuously make acquisitions (equivalent to pressing the Run key on the front panel).
Syntax	:RUN

Stop Command

:STOP

Set →

Description	The stop command stops the oscilloscope making further acquisitions (equivalent to pressing the Stop key on the front panel).
Syntax	:STOP

Force Command

:FORCe

Set →

Description	The Force command forces an acquisition (equivalent to pressing the Force-Trig key on the front panel).
Syntax	:FORCe

Timebase Commands

:TIMebase:EXPand

Set → / → Query

Description	Sets or queries the horizontal expansion mode.	
Syntax	:TIMebase:EXPand {CENTer|TRIGger|?}	
Parameter/Return parameter	CENTer	Expand from the center of the display.
	TRIGger	Expand from the trigger point.
Example	:TIMebase:EXPand TRIGger Sets the expansion point to the trigger point.	

:TIMebase:SCALe

Set → / → Query

Description	Sets or queries the horizontal scale.	
Syntax	:TIMebase:SCALe {<NRf> | ?}	
Parameter	<NRf>	Horizontal scale
Return parameter	<NR3>	Returns the horizontal scale.
Example	:TIMebase:SCALe 5.00E-2 Sets the horizontal scale to 50ms/div.	

:TIMebase:MODe

Set → / → Query

Description	Sets or queries the time base mode. The time base mode determines the display view window on the scope.	
Syntax	:TIMebase:MODe {MAIN | WINDow | XY | ?}	
Parameter	MAIN	Sets the time base mode to the main screen.

	WINDow	Sets the time base mode to the zoom window.
	XY	Sets the time base mode to the XY display.
Return parameter	Returns the time base mode (MAIN, WINDOW, XY)	
Example	:TIMebase:MODe MAIN Sets the time base mode to the main mode.	

:TIMebase:WINDow:POSition

Set → → Query

Description	Sets or queries the zoom horizontal position.	
Syntax	:TIMebase:WINDow:POSition {<NRf> | ?}	
Related commands	:TIMebase:MODe	
Parameter	<NRf>	Horizontal position for zoom window
Return parameter	<NR3>	Returns the zoom horizontal position.
Example	:TIMebase:WINDow:POSition 2.0E-3 Sets the zoom horizontal position as 20ms.	

:PLAYStop

Set →

Description	Set the zoom play/stop or play the current segment in segments mode.	
Syntax	:PLAYStop {ON|OFF} :PLAYStop?	
Parameter	ON	Play
	OFF	Stop
Example	:PLAYStop ON :PLAYStop? ON	

:TIMebase:WINDow:SCALe

Set → / → Query

Description	Sets or queries the zoom horizontal scale.	
Note	If the oscilloscope is under "ZOOM" mode, the main timebase function will be disabled and cannot be modified.	
Syntax	:TIMebase:WINDow:SCALe {<NRf> | ?}	
Related commands	:TIMebase:MODe	
Parameter	<NRf>	Zoom horizontal scale. The range will depend on the time base.
Return parameter	<NR3>	Returns the zoom horizontal scale.
Example	:TIMebase:WINDow:SCALe 2.0E-3 Sets the zoom horizontal scale to 2ms.	

Trigger Commands

:TRIGger:TYPe

Set → / → Query

Description	Sets or queries the trigger type.	
Syntax	:TRIGger:TYPe {EDGe | LOGic | PULSEWidth | VIDeo | RUNT | RISEFall | BUS | TIMEOut | ? }	
Parameter	EDGE	Edge trigger
	LOGic	Logic trigger
	PULSEWidth	Pulse width trigger
	VIDeo	Video trigger
	RUNT	Runt trigger
	RISEFall	Rise and fall trigger
	BUS	Bus trigger
	TIMEOut	Timeout trigger
Return parameter	Returns the trigger type.	
Example	:TRIGger:TYPe EDGE Sets the trigger type to edge.	

:TRIGger:SOURce

Set → / → Query

Description	Sets or queries the trigger source.	
Syntax	:TRIGger:SOURce { CH1 | CH2 | CH3 | CH4 | EXT | EXT/5 | LINe | ? }	
Parameter	CH1 to CH4	Channel 1 to channel 4
	EXT	External source
	EXT/5	External divided by 5
	LINe	AC Line
Return parameter	Returns the trigger source.	

Example	:TRIGger:SOURce CH1 Sets the trigger source to channel 1.

:TRIGger:COUPle

Set →
→ Query

Description	Sets or queries the trigger coupling.	
Note	Applicable for edge and delay triggers only.	
Syntax	:TRIGger:COUPle {AC | DC | HF | ?}	
Parameter	AC	AC mode
	DC	DC mode
	HF	High frequency rejection
Return parameter	Returns the trigger coupling.	
Example	:TRIGger:COUPle AC Sets the trigger coupling to AC.	

:TRIGger:MODe

Set →
→ Query

Description	Sets or queries the trigger mode.	
Syntax	:TRIGger:MODe {AUTo | NORMal | ?}	
Parameter	AUTo	Auto trigger (Untriggered roll)
	NORMal	Normal trigger
Return parameter	Returns the trigger mode.	
Example	:TRIGger:MODe NORMal Sets the trigger mode to normal.	

:TRIGger:HOLDoff

Set →
→ Query

Description	Sets or queries the holdoff time.	
Syntax	:TRIGger:HOLDoff {<NRf> | ?}	
Parameter	<NRf>	Holdoff time

Return parameter	<NR3>	Returns the trigger holdoff time.
Example	:TRIGger:HOLDoff 1.00E-8 Sets the trigger holdoff time to 10ns.	

:TRIGger:LEVel

Set → Query

Description	Sets or queries the level.	
Note	Not applicable to Pulse Runt and Rise & Fall triggers.	
Syntax	:TRIGger:LEVel {SETTO50 | <NRf> | ?}	
Related commands	:TRIGger:TYPe	
Parameter	<NRf>	Trigger level value.
	SETTO50	Sets the trigger level to the User level (50% by default).
Return parameter	<NR3>	Returns the trigger level.
Example	:TRIGger:LEVel 3.30E-1 Sets the trigger level to 330mV/mA.	

:TRIGger:HLEVel

Set → Query

Description	Sets or queries the high trigger level.	
Note	Applicable for Rise and Fall/Pulse Runt triggers.	
Syntax	:TRIGger:HLEVel {<NRf> | ?}	
Related commands	:TRIGger:TYPe	
Parameter	<NRf>	High level value.
Return parameter	<NR3>	Returns the trigger high level.
Example	:TRIGger:HLEVel 3.30E-1 Sets the trigger high level to 330mV/mA.	

:TRIGger:LLEVel

Set → / → Query

Description	Sets or queries the low trigger level.	
Note	Applicable for Rise and Fall/Pulse Runt triggers.	
Syntax	:TRIGger:LLEVel {<NRf> | ?}	
Related commands	:TRIGger:TYPe	
Parameter	<NRf>	Low level value.
Return parameter	<NR3>	Returns the trigger low level.
Example	:TRIGger:LLEVel -3.30E-3 Sets the trigger low level to -330mV/mA.	

:TRIGger:LOGic:FUNCtion

Set → / → Query

Description	Sets or queries the logical combination of the input channels for logic trigger.	
Syntax	:TRIGger:LOGic:FUNCtion {AND|NAND|NOR| OR} :TRIGger:LOGic:FUNCtion?	
Related commands	:TRIGger:LOGic:PATtern:INPut:D<X>	
Parameter	AND	Sets the AND mode of define logic.
	NAND	Sets the NAND mode of define logic.
	NOR	Sets the NOR mode of define logic.
	OR	Sets the OR mode of define logic.
Example 1	TRIGger:LOGic:FUNCtion? >AND	
Example 2	TRIGger:LOGic:FUNCtion NAND Sets the NAND mode of define logic.	

:TRIGger:LOGic:PATtern:INPut:D<x>

Set → / → Query

Description	Sets or returns the logic trigger input for the specified digital channel.	
Syntax	:TRIGger:LOGic:PATtern:INPut:D<x>{HIGH|LOW|X} :TRIGger:LOGic:PATtern:INPut:D<x>?	
Parameter	<x>	It is the channel number.
	HIGH	Sets the logic high state.
	LOW	Sets the logic low state.
	X	Sets a "don't care" state.
Example	:TRIGger:LOGic:PATtern:INPut:D0? >X	

:TRIGger:LOGic:PATtern:DELTatime

Set → / → Query

Description	Sets or returns the pattern trigger delta time value.	
Syntax	:TRIGger:LOGic:PATtern:DELTatime <NR3> :TRIGger:LOGic:PATtern:DELTatime?	
Related commands	:TRIGger:LOGic:PATtern:WHEn	
Parameter	<NR3>	It is a floating point value with exponent that sets the pattern trigger time value. A range of 1E–9 (1 ns) to 10.0E0 (10 s).
Example 1	:TRIGger:LOGic:PATtern:DELTatime 8.960e-05	
Example 2	:TRIGger:LOGic:PATtern:DELTatime? >8.960e-05	

:TRIGger:LOGic:PATtern:WHEn

Set
Query

Description	Sets or returns the pattern logic condition on which to trigger the oscilloscope.	
Syntax	:TRIGger:LOGic:PATtern:WHEn {TRUE |FALSE |LESSthan|MOREthan|EQual|UNEQual} :TRIGger:LOGic:PATtern:WHEn?	
Parameter	TRUE	Set true mode.
	FALSE	Set false mode.
	LESSTHAN	Set less than mode (Is True < time period (set in :TRIGger:LOGic:PATtern: DELTatime)).
	MORETHAN	Set more than mode (Is True > time period (set in :TRIGger:LOGic:PATtern: DELTatime)).
	EQUAL	Set equal mode (Is True = time period (set in: TRIGger:LOGic: PATtern: DELTatime)).
	UNEQUAL	Set unequal mode (Is True ≠ time period (set in :TRIGger:LOGic:PATtern: DELTatime)).
Example 1	:TRIGger:LOGic:PATtern:WHEn FALSE	
Example 2	:TRIGger:LOGic:PATtern:WHEn? >FALSE	

:TRIGger:EDGe:SLOP

Set → / → Query

Description	Sets or queries the trigger slope.	
Syntax	:TRIGger:EDGe:SLOP {RISe | FALL | ? }	
Related commands	:TRIGger:TYPe	
Parameter	RISe	Rising slope
	FALL	Falling slope
Return parameter	Returns the trigger slope.	
Example	:TRIGger:EDGe:SLOP FALL Sets the trigger slope to falling.	

:TRIGger:PULSEWidth:POLarity

Set → / → Query

Description	Sets or queries the pulse width trigger polarity.	
Syntax	:TRIGger:PULSEWidth:POLarity {POSitive | NEGative | ?}	
Related commands	:TRIGger:TYPe	
Parameter	POSitive	Positive polarity
	NEGative	Negative polarity
Return parameter	Returns the pulse width polarity.	
Example	:TRIGger:PULSEWidth:POLarity POSitive Sets the pulse width polarity to positive.	

:TRIGger:RUNT:POLarity

Set / Query

Description	Sets or queries the Pulse Runt trigger polarity.	
Syntax	:TRIGger:RUNT:POLarity { POSitive | NEGative | ? }	
Related commands	:TRIGger:TYPe	
Parameter	POSitive	Positive polarity
	NEGative	Negative polarity
Return parameter	Returns the pulse runt trigger polarity.	
Example	:TRIGger:RUNT:POLarity POSitive Sets the Pulse Runt trigger polarity to positive.	

:TRIGger:RUNT:WHEn

Set / Query

Description	Sets or queries the Pulse Runt trigger conditions.	
Syntax	:TRIGger:RUNT:WHEn {MOREthan| LESSthan | EQual | ? }	
Related commands	:TRIGger:TYPe :TRIGger:RUNT:TIMe	
Parameter	MOREthan	>
	LESSthan	<
	EQual	=
Return parameter	Returns the pulse runt trigger condition.	
Example	:TRIGger:RUNT:WHEn EQual Sets the Pulse Runt trigger condition to equal (=).	

:TRIGger:RUNT:TIMe

Set → Query

Description	Sets or queries the Pulse Runt trigger time.	
Syntax	:TRIGger:RUNT:TIMe {<NRf> | ? }	
Related commands	:TRIGger:TYPe :TRIGger:RUNT:WHEn	
Parameter	<NRf>	Pulse runt time (30nS to 10S)
Return Parameter	<NR3>	Returns the runt time in seconds.
Example	:TRIGger:RUNT:TIMe 4.00E-5 Sets the runt time to 40.0uS.	

:TRIGger:RISEFall:SLOP

Set → Query

Description	Sets or queries the Rise & Fall slope.	
Syntax	:TRIGger:RISEFall:SLOP {RISe | FALL | ?}	
Parameter	RISe	Rising slope
	FALL	Falling slope
Return parameter	Returns the rise & fall slope.	
Example	:TRIGger:RISEFall:SLOP RISe Sets the Rise & Fall slope to rising.	

:TRIGger:RISEFall:WHEn

Set → Query

Description	Sets or queries the rise/fall trigger conditions.	
Syntax	:TRIGger:RISEFall:WHEn {MOREthan | LESSthan | EQual | ? }	
Related commands	:TRIGger:TYPe :TRIGger:RISEFall:TIMe	
Parameter	MOREthan	>
	LESSthan	<

	Equal	=
Return parameter	Returns the rise/fall trigger condition.	
Example	:TRIGger:RISEFall:WHEn EQual Sets the Rise and Fall trigger condition to equal (=).	

:TRIGger:RISEFall:TIMe

Set → / → Query

Description	Sets or queries the Rise and Fall time.	
Syntax	:TRIGger:RISEFall:TIMe {<NRf> | ? }	
Related commands	:TRIGger:TYPe :TRIGger:RISEFall:WHEn	
Parameter	<NRf>	Rise and Fall time (30nS to 10S)
Return Parameter	<NR3>	Returns the rise and fall time in seconds.
Example	:TRIGger:RISEFall:TIMe 4.00E-5 Sets the trigger rise & fall to 40.0us.	

:TRIGger:VIDeo:TYPe

Set → / → Query

Description	Sets or queries the video trigger type.	
Syntax	:TRIGger:VIDeo:TYPE {NTSC | PAL | SECam | ? }	
Related commands	:TRIGger:TYPe	
Parameter	NTSC	NTSC
	PAL	PAL
	SECam	SECAM
Return parameter	Returns the video trigger type.	
Example	:TRIGger:VIDeo:TYPe NTSC Sets the video trigger to NTSC.	

:TRIGger:VIDeo:FIELd

Set → / → Query

Description	Sets or queries the video trigger field.	
Syntax	:TRIGger:VIDeo:FIELd { FIELD1 | FIELD2 | ALLFields | ALLLines | NUMERic? }	
Related commands	:TRIGger:TYPe	
Parameter	FIELD1	Trigger on field 1
	FIELD2	Trigger on field 2
	ALLFields	Trigger on all fields
	ALLLines	Trigger on all lines
	NUMERic	Specific lines
Return parameter	Returns the video trigger field.	
Example	:TRIGger:VIDeo:FIELd ALLFields Sets the video trigger to trigger on all fields.	

:TRIGger:VIDeo:LINe

Set → / → Query

Description	Sets or queries the video trigger line.	
Syntax	:TRIGger:VIDeo:LINe {<NR1> | ?}	
Related commands	:TRIGger:TYPe	
Parameter	<NR1>	Video line
Return parameter	<NR3>	Returns the video trigger line.
Example	:TRIGger:VIDeo:LINe 1 Sets the video trigger to line 1.	

:TRIGger:PULSe:WHEn

Set →
→ Query

Description	Sets or queries the pulse width trigger conditions.
Syntax	:TRIGger:PULSe:WHEn { MOREthan | LESSthan | EQual | ? }
Related commands	:TRIGger:TYPe :TRIGger:PULSe:TIMe
Parameter	MORE than >, LESSthan <, EQual =
Return parameter	Returns the pulse width trigger conditions.
Example	:TRIGger:PULSe:WHEn EQual Sets the trigger pulse width conditions to equal (=).

:TRIGger:PULSe:TIMe

Set →
→ Query

Description	Sets or queries the pulse width time.
Syntax	:TRIGger:PULSe:TIMe {<NRf> | ?}
Related commands	:TRIGger:TYPe :TRIGger:PULSe:WHEn
Parameter	<NRf> Pulse width time (30ns~10s)
Return parameter	<NR3> Returns the pulse width time in seconds.
Example	:TRIGger:PULSe:TIMe 4.00E-5 Sets the trigger pulse width to 40.0us.

:TRIGger:TIMEOut:TIMER

Set → / → Query

Description	Sets or returns timeout trigger time.	
Syntax	:TRIGger:TIMEOut:TIMER {<NRf> | ? }	
Related commands	:TRIGger:TIMEOut:WHEn	
Parameter	<NRf>	Timeout time. (30nS to 10S).
Return parameter	Returns the timeout time as <NR3>.	
Example	:TRIGger:TIMEOut:TIMER? 8.960e-05	

:TRIGger:STATe

→ Query

Description	Returns the current state of the triggering system.	
Syntax	:TRIGger:STATe?	
Return parameter	*ARMED	Indicates that the oscilloscope is acquiring pretrigger information.
	*AUTO	Indicates that the oscilloscope is in the automatic mode and acquires data even in the absence of a trigger.
	*READY	Indicates that all pretrigger information has been acquired and that the oscilloscope is ready to accept a trigger.
	*SAVE	Indicates that the oscilloscope is in save mode and is not acquiring data.
	*TRIGGER	Indicates that the oscilloscope triggered and is acquiring the post trigger information.

Example	:TRIGger:STATe? AUTO The trigger is in auto mode.

:TRIGger:BUS:B1:I2C:CONDition

Set → / → Query

Description	Sets or queries the I²C trigger conditions.	
Syntax	:TRIGger:BUS:B1:I2C:CONDition {STARt | STOP | REPEATstart | ACKMISS | ADDRess | DATA | ADDRANDDATA | ? }	
Parameter	STARt	Set Start as the I²C trigger condition.
	STOP	Set Stop as the I²C trigger condition.
	REPEATstart	Set Repeat of Start as the I²C trigger condition.
	ACKMISS	Set Missing Acknowledgement as the I²C trigger condition.
	ADDRess	Set Address as the I²C trigger condition.
	DATA	Set Data as the I²C trigger condition.
	ADDRANDDATA	Set Address and Data as the I²C trigger condition.
Return parameter	Returns the I²C bus trigger condition.	
Example	:TRIGger:BUS:B1:I2C:CONDition ADDRess Set Address as the I2C trigger condition.	

:TRIGger:BUS:B1:I2C:ADDRess:MODe

Set → / → Query

Description	Sets or queries the I²C addressing mode (7, 8 or 10 bits).	
Syntax	:TRIGger:BUS:B1:I2C:ADDRess:MODe {ADDR7 | ADDR8 | ADDR10 | ? }	
Related commands	:TRIGger:BUS:B1:I2C:CONDition	
Parameter	ADDR7	7 bit addressing
	ADDR8	8 bit addressing
	ADDR10	10 bit addressing
Example	:TRIGger:A:I2C:ADDRess:MODe ADDR7 The addressing mode is currenty set to 7 bits.	

:TRIGger:BUS:B1:I2C:ADDRess:VALue

Set → / → Query

Description	Sets or queries the I²C bus address value when the I²C bus is set to trigger on Address or Address/Data.	
Syntax	:TRIGger:BUS:B1:I2C:ADDRess:VALue {<string> | ? }	
Related commands	:TRIGger:BUS:B1:I2C:ADDRess:MODe	
Parameter	<sting>	7/10 characters, must be enclosed in double quotes, “string”. x = don’t care 1 = binary 1 0 = binary 0
Return Parameter	Returns the address value.	
Example1	:TRIGger:BUS:B1:I2C:ADDRess:MODe ADDR7 :TRIGger:BUS:B1:I2C:ADDRess:VALue "xxx0101" Sets the address to XXX0101	

Example 2	:TRIGger:BUS:B1:I2C:ADDRess:VALue? XXX0101

:TRIGger:BUS:B1:I2C:ADDRess:DIRection

Set → / → Query

Description	Sets or queries the address bit as read write or don't care.	
Note	This setting only applies when the I²C trigger is set to trigger on Address or Address/Data	
Syntax	:TRIGger:BUS:B1:I2C:ADDRess:DIRection { READ | WRITE | NOCARE | ? }	
Related commands	:TRIGger:BUS:B1:I2C:CONDition	
Parameter	READ	Set read as the data direction.
	WRITE	Set write as the data direction.
	NOCARE	Set either as the data direction.
Return Parameter	Returns the direction (READ, WRITE, NOCARE).	
Example	:TRIGger:BUS:B1:I2C:ADDRess:DIRection READ Sets the direction to READ.	

:TRIGger:BUS:B1:I2C:DATa:SIZe

Set → / → Query

Description	Sets or queries the data size in bytes for the I²C bus.	
Note	This setting only applies when the I²C trigger is set to trigger on Data or Address/Data	
Syntax	:TRIGger:BUS:B1:I2C:DATa:SIZe {<NR1> | ? }	
Related commands	:TRIGger:BUS:B1:I2C:CONDition	
Parameter	<NR1>	Number of data bytes (1 to 5).
Return parameter	<NR1>	Returns the number of bytes.

Example	:TRIGger:BUS:B1:I2C:DATa:SIZe 3 Sets the number of bytes to 3.

:TRIGger:BUS:B1:I2C:DATa:VALue

Set → Query

Description	Sets or queries the triggering data value for the I²C bus when the I²C bus is set to trigger on Data or Address/Data.	
Syntax	:TRIGger:BUS:B1:I2C:DATa:VALue {<string> | ? }	
Related commands	:TRIGger:BUS:B1:I2C:DATa:SIZe	
Parameter	<sting>	The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string". x = don't care 1 = binary 1 0 = binary 0
Return Parameter	Returns the data value.	
Example1	:TRIGger:BUS:B1:I2C:DATa:SIZe 1 :TRIGger:BUS:B1:I2C:DATa:VALue "1x1x0101" Sets the value to XXX0101	
Example 2	:TRIGger:BUS:B1:I2C:DATa:VALue? 1X1X0101	

:TRIGger:BUS:B1:UART:CONDition

Set → Query

Description	Sets or queries the UART triggering condition.	
Syntax	:TRIGger:BUS:B1:UART:CONDition { STARt | ERRor | CERRor | DATA | ? }	
Parameter	STARt	Set trigger on the start bit.
	ERRor	Set trigger on any UART error.

	CERRor	Set trigger on the a specific error
	DATA	Set trigger when specific UART data is received.
Return Parameter	Returns the triggering condition.	
Example	:TRIGger:BUS:B1:UART:CONDition STARt Sets the UART bus to trigger on start bit.	

:TRIGger:BUS:B1:UART:RX:DATa:SIZe

Set → / → Query

Description	Sets or queries the number of bytes for UART data.	
Note	This setting only applies when the UART trigger is set to trigger on Rx Data	
Syntax	:TRIGger:BUS:B1:UART:RX:DATa:SIZe {<NR1> | ?}	
Related commands	:TRIGger:BUS:B1:UART:CONDition	
Parameter	<NR1>	Number of bytes (5, 6, 7, 8).
Return parameter	<NR1>	Returns the number of bytes.
Example	:TRIGger:BUS:B1:UART:RX:DATa:SIZe 5 Sets the number of bytes to 5.	

:TRIGger:BUS:B1:UART:RX:DATa:VALue

Set → / → Query

Description	Sets or queries the triggering data value for the UART bus when the bus is set to trigger on Rx Data.	
Syntax	:TRIGger:BUS:B1:UART:RX:DATa:VALue {<string> | ? }	
Related commands	:TRIGger:BUS:B1:UART:RX:DATa:SIZe	
Parameter	<sting>	The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string". x = don't care 1 = binary 1 0 = binary 0
Return Parameter	Returns the data value.	
Example1	:TRIGger:BUS:B1:UART:CONDition RXDATA :TRIGger:BUS:B1:UART:RX:DATa:SIZe 1 :TRIGger:BUS:B1:UART:RX:DATa:VALue "1x1x0101" Sets the value to 1x1x0101	
Example 2	:TRIGger:BUS:B1:UART:RX:DATa:VALue? 1X1X0101	

:TRIGger:BUS:B1:UART:TX:DATa:SIZe

Set → / → Query

Description	Sets or queries the number of bytes for UART data.
Note	This setting only applies when the UART trigger is set to trigger on Tx Data
Syntax	:TRIGger:BUS:B1:UART:TX:DATa:SIZe {<NR1> | ?}
Related commands	:TRIGger:BUS:B1:UART:CONDition

Parameter	<NR1>	Number of bytes (5, 6, 7, 8).
Return parameter	<NR1>	Returns the number of bytes.
Example	:TRIGger:BUS:B1:UART:TX:DATa:SIZe 5 Sets the number of bytes to 5.	

:TRIGger:BUS:B1:UART:TX:DATa:VALue

Set → / → Query

Description	Sets or queries the triggering data value for the UART bus when the bus is set to trigger on Tx Data.	
Syntax	:TRIGger:BUS:B1:UART:TX:DATa:VALue {<string> | ? }	
Related commands	:TRIGger:BUS:B1:UART:TX:DATa:SIZe	
Parameter	<sting>	The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string". x = don't care 1 = binary 1 0 = binary 0
Return Parameter	Returns the data value.	
Example1	:TRIGger:BUS:B1:UART:CONDition TXDATA :TRIGger:BUS:B1:UART:TX:DATa:SIZe 1 :TRIGger:BUS:B1:UART:TX:DATa:VALue "1x1x0101" Sets the value to 1x1x0101	
Example 2	:TRIGger:BUS:B1:UART:TX:DATa:VALue? 1X1X0101	

:TRIGger:BUS:B1:CAN:CONDition

Set / Query

Description	Sets or returns the CAN trigger condition.	
Syntax	:TRIGger:BUS:B1:CAN:CONDition {SOF|FRAMEtype|IDentifier|DATA|IDANDDATA|EOF|ACKMISS|STUFFERR|?}	
Parameter/ Return parameter	SOF	Triggers on a start of frame
	FRAMEtype	Triggers on the type of frame
	Identifier	Triggers on a matching identifier
	DATA	Triggers on matching data
	IDANDDATA	Triggers on matching identifier and data field
	EOF	Triggers on the end of frame
	ACKMISS	Triggers on a missing acknowledge
	STUFFERR	Triggers on a bit stuffing error
Example1	:TRIGger:BUS:B1:CAN:CONDition SOF Triggers on a start of frame.	
Example2	:TRIGger:BUS:B1:CAN:CONDition? >SOF	

:TRIGger:BUS:B1:CAN:FRAMEtype

Set / Query

Description	Sets or returns the frame type for a CAN FRAMEType trigger.	
Syntax	:TRIGger:BUS:B1:CAN:FRAMEtype {DATA|REMote|ERRor|OVERLoad|?}	
Parameter/ Return parameter	DATA	Sets the frame type to data frame
	REMote	Sets the frame type to remote frame
	ERRor	Sets the frame type to error frame
	OVERLoad	Sets the frame type to overload

Example	:TRIGger:BUS:B1:CAN:FRAMEtype DATA Sets the frame type to DATA.

:TRIGger:BUS:B1:CAN:IDentifier:MODe

Set → Query

Description	Sets or returns the CAN identifier mode for the bus.	
Syntax	:TRIGger:BUS:B1:CAN:IDentifier:MODe {STANDard|EXTended|?}	
Parameter/ Return parameter	STANDard	Standard addressing mode
	EXTended	Extended addressing mode
Example	:TRIGger:BUS:B1:CAN:IDentifier:MODe? >STANDARD Returns the addressing mode.	

:TRIGger:BUS:B1:CAN:DATa:SIZe

Set → Query

Description	Sets or returns the length of the data string in bytes for a CAN trigger. Note: Only applicable when the condition is set to DATA or IDANDDATA.	
Syntax	:TRIGger:BUS:B1:CAN:DATa:SIZe {<NR1>|?}	
Parameter/ Return parameter	<NR1>	1~8 (bytes)
Example	:TRIGger:BUS:B1:CAN:DATa:SIZe? >1 :TRIGger:BUS:B1:CAN:DATa:SIZe 2 :TRIGger:BUS:B1:CAN:DATa:SIZe? >2	

:TRIGger:BUS:B1:CAN:DATa:VALue

Set → / → Query

Description	Sets or returns the binary data string to be used for a CAN trigger. Note: Only applicable when the condition is set to DATA or IDANDDATA.	
Related Commands	:TRIGger:BUS:B1:CAN:DATa:SIZe	
Syntax	:TRIGger:BUS:B1:CAN:DATa:VALue {<string>|?}	
Parameter/ Return parameter	<string>	The size of the string depends on the data size setting. The string must be enclosed in double quotes, "string". String contents: x = don't care 1 = binary 1 0 = binary 0
Example	:TRIGger:BUS:B1:CAN:DATa:SIZe 1 :TRIGger:BUS:B1:CAN:DATa:VALue "01010X1X" :TRIGger:BUS:B1:CAN:DATa:VALue? >01010X1X	

:TRIGger:BUS:B1:LIN:CONDition

Set → / → Query

Description	Sets or returns the LIN trigger condition.	
Syntax	:TRIGger:BUS:B1:LIN:CONDition {SYNCField|IDentifier|DATA|IDANDDATA|WAKEup|SLEEP|ERRor|?}	
Parameter/ Return parameter	SYNCField	Sets the LIN trigger condition to the sync field.
	IDentifier	Sets the LIN trigger condition to identifier field.

	DATA	Sets the LIN trigger condition to the data field.
	IDANDDATA	Sets the LIN trigger condition to identifier and data field
	WAKEup	Sets the LIN trigger condition to wake up.
	SLEEP	Sets the LIN trigger condition to sleep.
	ERRor	Sets the LIN trigger condition to error.
Example	:TRIGger:BUS:B1:LIN:CONDition? >IDANDDATA	
	:TRIGger:BUS:B1:LIN:CONDition DATA	
	:TRIGger:BUS:B1:LIN:CONDition? >DATA	

:TRIGger:BUS:B1:LIN:DATa:SIZe

Set → / → Query

Description	Sets or returns the length of the data string in bytes for the LIN trigger. Note: Only applicable when the condition is set to DATA or IDANDDATA.	
Syntax	:TRIGger:BUS:B1:LIN:DATa:SIZe {<NR1>|?}	
Parameter/ Return parameter	<NR1>	1~8 (bytes)
Example	:TRIGger:BUS:B1:LIN:DATa:SIZe? >1 :TRIGger:BUS:B1:LIN:DATa:SIZe 2 :TRIGger:BUS:B1:LIN:DATa:SIZe? >2	

:TRIGger:BUS:B1:LIN:DATa:VALue

Set → / → Query

Description	Sets or returns the binary data string to be used for the LIN trigger. Note: Only applicable when the condition is set to DATA or IDANDDATA.	
Related Commands	:TRIGger:BUS:B1:LIN:DATa:SIZe	
Syntax	:TRIGger:BUS:B1:LIN:DATa:VALue {<string>|?}	
Parameter/ Return parameter	<string>	The size of the string depends on the data size setting. The string must be enclosed in double quotes, "string". String contents: x = don't care 1 = binary 1 0 = binary 0

Example	:TRIGger:BUS:B1:LIN:DATa:SIZe 1 :TRIGger:BUS:B1:LIN:DATa:VALue “01010X1X” :TRIGger:BUS:B1:LIN:DATa:VALue? >01010X1X

:TRIGger:BUS:B1:SPI:DATa:SIZe

Set / Query

Description	Sets or queries the number of words for SPI data.	
Note	This setting only applies when the SPI trigger is set to trigger on MISO, MOSI or MISO/MOSI	
Syntax	:TRIGger:BUS:B1:SPI:DATa:SIZe {<NR1> | ?}	
Related commands	:TRIGger:BUS:B1:SPI:CONDition	
Parameter	<NR1>	Number of words (4 to 32).
Return parameter	<NR1>	Returns the number of words.
Example	:TRIGger:BUS:B1:SPI:DATa:SIZe 10 Sets the number of words to 10.	

System Commands

:SYSTem:LOCK

Set → / → Query

Description	Turns the panel lock on off.	
Syntax	:SYSTem:LOCK {OFF | ON | ? }	
Parameter	OFF	System lock off
	ON	System lock on
Return parameter	Returns the status of the panel lock (ON, OFF).	
Example	:SYSTem:LOCK ON Turns the panel lock on.	

:SYSTem:ERRor

Set → / → Query

Description	Queries the error queue.
Syntax	:SYSTem:ERRor?
Return parameter	Returns the last message in the error queue.
Example	:SYSTem:ERRor? +0, "No error."

Save/Recall Commands

:RECAll:SETUp

Set →

Description	Recalls setup settings from memory or USB.	
Syntax	:RECAll:SETUp {S1~S20 | <file path>("Disk:/xxx.SET","USB:/xxx.SET")}	
Parameter	S1~S20	Recall Set1~Set20
	<file path>	Recall a file from the DSO internal files system or from a USB flash drive.
Example	:RECAll:SETUp S1 Recalls setup setting S1 from memory. :RECAll:SETUp "Disk:/DS0001.SET" Recall the setup setting DS0001.SET from the internal memory.	

:SAVe:IMAGe

Set →

Description	Saves a screen image to the assigned file path with a specified filename.	
Syntax	:SAVe:IMAGe {<file path> ("Disk:/xxx.PNG", "USB:/xxx.BMP)}	
Related commands	:SAVe:IMAGe:FILEFormat :SAVe:IMAGe:INKSaver	
Parameter	xxx.PNG or xxx.BMP	File name (8 characters max)
Example	:SAVe:IMAGe "Disk:/pic1.PNG" Saves a screen image named pic1.png to the root directory (Disk:/) of the scope. :SAVe:IMAGe "USB:/pic1.BMP" Saves a screen image named pic1.bmp to the root directory of the external USB flash disk.	

:SAVe:IMAGe:FILEFormat

Set → / → Query

Description	Sets the file format for image.	
Syntax	:SAVe:IMAGe:FILEFormat {PNG | BMP | JPG | TIFf |?}	
Related commands	:SAVe:IMAGe :SAVe:IMAGe:INKSaver	
Parameter	PNG	Sets the file format to PNG
	BMP	Sets the file format to BMP
	JPG	Sets the file format JPG
	TIFf	Set the file format TIFF
Return parameter	Returns the file format (PNG, BMP, JPG, TIFF).	
Example	:SAVe:IMAGe:FILEFormat PNG Sets the image file format to PNG.	

:SAVe:IMAGe:INKSaver

Set → / → Query

Description	Turns Ink Saver on or off.	
Syntax	:SAVe:IMAGe:INKSaver {OFF | ON |?}	
Related commands	:SAVe:IMAGe :SAVe:IMAGe:FILEFormat	
Parameter	OFF	Turns Inksaver off.
	ON	Turns Inksaver on.
Return parameter	Returns Ink Saver status (ON, OFF).	
Example	:SAVe:IMAGe:INKSaver ON Turns Ink Saver on.	

:SAVe:SETUp

Set →

Description	Saves the current setup to internal memory (Set1~Set20) or the designated file path.

Syntax	:SAVe:SETUp {<file path> (“Disk:/xxx.SET”, “USB:/xxx.SET) | S1~S20}	
Parameter	S1~S20	Saves the setup to Set1~Set20
	File path	Saves the setup to disk to the specified file path.
Example	:SAVe:SETUp S1 Saves the current setup to Set1 in internal memory. :SAVe:SETUp “Disk:/DS0001.SET” Saves the current setup to DS0001.SET in the root directory of the internal memory.	

:SAVe:WAVEform

Set →

Description	Saves a waveform to internal memory or to a designated file path.	
Related commands	:SAVe:WAVEform:FILEFormat	
Syntax	:SAVe:WAVEform {CH1~REF4, REF<X> } | {CH1~REF4, W1~W20} | {CH1~ALL, file path}	
Parameter	CH1~REF4,	CH1~CH4, Math, REF1~4
	<X>	1,2,3,4 (REF1, REF2, REF3, REF4)
	W1~W20	Wave1~Wave20
	ALL	All the displayed waveforms on screen.
	File path	Saves the waveform(s) to disk or USB to the specified file path. (LSF or CSV, but note that detail CSV can’t be recalled to the scope.)
Example 1	:SAVe:WAVEform CH1, REF2 Saves the channel1 waveform to REF2.	

Example 2	:SAVe:WAVEform ALL, "Disk:/ALL001" Creates a folder which named "ALL001" and saves all displayed waveform to the "ALL001" directory with LSF format
Example 3	:SAVe:WAVEform ALL, "Disk:/ALL002.CSV" Save the all channels waveform to root directory (Disk:/) of the internal flash disk with CSV format.
Example 4	:SAVe:WAVEform CH2, "Disk:/DS0003.LSF" Save the channel 2's waveform to root directory (Disk:/) of the internal flash disk with LSF format.

:SAVe:WAVEform:FILEFormat

Set → / → Query

Description	Sets the waveform savefile format.	
Syntax	:SAVe:WAVEform:FILEFormat {CSV | ZIP | MATlab | ?}	
Parameter	CSV	Set the file format to CSV
	ZIP	Set the file format to ZIP
	MATlab	Set the file format to matlab
Return parameter	Returns the file format (CSV, ZIP, MATlab).	
Example	:SAVe:WAVEform:FILEFormat CSV Sets the file format to CSV.	

Bus Decode Commands

:BUS<x>:STATe

Set → / → Query

Description	Sets or queries the state of the bus.	
Syntax	:BUS<x>:STATe { OFF | ON | ? }	
Related commands	:BUS<x>:TYPe	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	OFF	Turns the bus off.
	ON	Turns the bus on.
Example	:BUS1:STATe ON Turns the bus 1 on.	

:BUS<x>:TYPe

Set → / → Query

Description	Sets or queries the type of bus.	
Syntax	:BUS<x>:TYPe { UART | I2C | SPI | CAN | LIN | ? }	
Related commands	:BUS<x>:STATE	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	UART	Set to UART mode.
	I2C	Sets to I2C mode.
	SPI	Set to SPI mode
	CAN	Sets to CAN mode.
	LIN	Sets to LIN mode.
Example	:BUS1:TYPe LIN Sets the bus to LIN mode.	

:BUS<x>:I2C:ADDRess:RWINClude

Set → / → Query

Description	Sets or queries whether the read/write bit is included in the I²C address.	
Syntax	:BUS<x>:I2C:ADDRess:RWINClude { OFF | ON | ? }	
Related commands	:BUS<x>:STATE	
Parameter	<x>	1 or 2, indicating decoding 1 or 2
	OFF	The R/W bit is not included.
	ON	The R/W bit is included.
Return parameter	0	The R/W bit is not included.
	1	The R/W bit is included.
Example	:BUS1:I2C:ADDRess:RWINClude ON Includes the R/W bit in the I²C address.	

:BUS<x>:I2C:SCLK:SOURce

Set → / → Query

Description	Sets or queries which channel is used for the I²C SCLK source.	
Syntax	:BUS<x>:I2C:SCLK:SOURce { CH1 | CH2 | CH3 | CH4|? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CH1 to CH4	Analog channels 1 ~ 4.
Example	:BUS1:I2C:SCLK:SOURce CH1 Sets channel 1 as the SCLK source.	

:BUS<x>:I2C:SCLK:THReshold

Set
Query

Description	Set or query the threshold of the currently selected SCL source for I2C decode.	
Syntax	:BUS<x>:I2C:SCLK:THReshold <NR3> :BUS<x>:I2C:SCLK:THReshold?	
Parameter/Return parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.
Example	:BUS1:I2C:SCLK:THReshold 1.0 Set I2C the SCL selected source threshold for I2C decode 1 to 1V	

:BUS<x>:I2C:SDA:SOURce

Set
Query

Description	Sets or queries which channel is used for the I²C SDA source.	
Syntax	:BUS<x>:I2C:SDA:SOURce{ CH1 | CH2 | CH3 | CH4| ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CH1 to CH4	Analog channels 1 ~ 4.
Example	:BUS1:I2C:SDA:SOURce CH1 Sets channel 1 as the SDA source.	

:BUS<x>:I2C:SDA:THReshold

Set
Query

Description	Set or query the threshold of the currently selected SDA source for I2C decode.
Syntax	:BUS<x>:I2C:SDA:THReshold <NR3> :BUS<x>:I2C:SDA:THReshold?

Parameter/Return parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.
Example	:BUS1:I2C:SDA:THReshold 1.0 Set I2C the SDA selected source threshold for I2C decode 1 to 1V	

:BUS<x>:UART:BITRate

Set → / → Query

Description	Sets or queries the UART bit rate.	
Syntax	:BUS<x>:UART:BITRate {<NR1> | ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	<NR1>	UART bit rate in bps
Example	:BUS1:UART:BITRate? >2400 :BUS1:UART:BITRate 50 :BUS1:UART:BITRate? >50	

:BUS<x>:UART:DATABits

Set → / → Query

Description	Sets or queries the number UART data for bus 1.	
Syntax	:BUS1:UART:DATABits { 5 | 6 | 7 | 8 | ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	5	5 data bits in the UART frame.
	6	6 data bits in the UART frame.
	7	7 data bits in the UART frame.
	8	8 data bits in the UART frame.

Example	:BUS1:UART:DATABits 7 Sets the UART frame to 7 bits.

:BUS<x>:UART:STOPBits

Set → / → Query

Description	Set or query UART decode stop bit.	
Syntax	:BUS<x>:UART:STOPBits {1|1.5|2} :BUS<x>:UART:STOPBits?	
Parameter/Return parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
Example	:BUS1:UART:STOPBits 1 Set decode stop bit to 1	

:BUS<x>:UART:BITOrder

Set → / → Query

Description	Set or query UART decode bit order.	
Syntax	:BUS<x>:UART:BITOrder {MSB|LSB} :BUS<x>:UART:BITOrder?	
Parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	MSB	Bit order is in larger-endian mode.
	LSB	Bit order is in little-endian mode.
Example	:BUS1:UART:BITOrder LSB Set decode bit order to LSB	

:BUS<x>:UART:SOURce

Set → / → Query

Description	Set or query UART decode source.	
Syntax	:BUS<x>:UART:SOURce {CH1|CH2|CH3|CH4} :BUS<x>:UART:SOURce?	
Parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.

	CH1-4	Channel 1~4.
Example	:BUS1:UART:SOURce CH Set UART decode 1 source to CH1	

:BUS<x>:UART:THReshold

Set / Query

Description	Set or query UART decode threshold.	
Syntax	:BUS<x>:UART:THReshold <NR3> :BUS<x>:UART:THReshold?	
Parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.
Example	:BUS1:UART:THReshold 1.0 Set decode 1 threshold to 1V	

:BUS<x>:UART:POLARity

Set / Query

Description	Sets or returns the UART polarity.	
Syntax	:BUS<x>:UART: POLARity {NORMal|INVerted} :BUS<x>:UART: POLARity?	
Parameter	<x>	1 or 2, indicating decoding 1 or 2
	NORMal	Sets normal UART polarity.
	INVerted	Sets inverted UART polarity.
Example	:BUS1:UART:POLARity NORMal :BUS1:UART:POLARity? NORMAL	

:BUS<x>:DISPlay:FORMAt

Set → / → Query

Description	Sets or queries the display format for the bus, either binary or hexadecimal.	
Syntax	:BUS<x>:DISPlay:FORMAt { BINary | HEXadecimal | ASCII | DECimal | ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	BINary	Binary format
	HEXadecimal	Hexadecimal format
	DECimal	Decimal format
Example	:BUS1:DISPlay:FORMAt BINary Sets the display format to binary.	

:BUS<x>:CAN:SOURce

Set → / → Query

Description	Sets or returns the CAN input source.	
Syntax	:BUS<x>:CAN:SOURce { CH1 | CH2 | CH3 | CH4| ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CH1 ~ CH4	Analog channel source
Example	:BUS1:CAN:SOURCE? >CH1 Returns the CAN source.	

:BUS<x>:CAN:PROBe

Set → / → Query

Description	Sets or returns the signal type of the CAN bus.	
Syntax	:BUS1:CAN:PROBe {CANH | CANL | TX | RX | ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CANH	CAN-High
	CANL	CAN-Low

	TX	Transmit
	RX	Receive
Example	:BUS1:CAN:PROBe? >CANH :BUS1:CAN:PROBe CANL :BUS1:CAN:PROBe? >CANL	

:BUS<x>:CAN:SAMPLEpoint

Set / Query

Description	Set or quuery the sample point of the CAN bus.
Syntax	:BUS<x>:CAN:SAMPLEpoint?
Return Parameter	Returns the sample point of the CAN bus as a percentage of the bit time.
Example	:BUS1:CAN:SAMPLEpoint? 50 Returns the sample point as a percentage.

:BUS<x>:CAN:BITRate

Set / Query

Description	Sets or returns the bit rate of the CAN bus.	
Syntax	:BUS<x>:CAN:BITRate {RATE10K|RATE20K|RATE50K|RATE125K|RATE250K| RATE500K|RATE800K|RATE1M | <NR1> | ?}	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	RATE10K	10 kbps
	RATE20K	20 kbps
	RATE50K	50 kbps
	RATE125K	125 kbps
	RATE250K	250 kbps
	RATE500K	500 kbps

	RATE800K	800 kbps
	RATE1M	1 Mbps
	<NR1>	CAN bit rate in bps

Example
:BUS1:CAN:BITRate?
>1000000

:BUS1:CAN:BITRate rate800k
:BUS1:CAN:BITRate?
>800000

:BUS1:CAN:BITRate 25000
:BUS1:CAN:BITRate?
>25000

:BUS<x>:LIN:BITRate

Set →
→ Query

Description	Sets or returns the bit rate of the LIN bus.	
Syntax	:BUS<x>:LIN:BITRate {<NR1> | ?}	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	<NR1>	LIN bit rate in bps.

Example
:BUS1:LIN:BITRate 9600
Sets the LIN bit rate to 9600bps.

:BUS<x>:LIN:POLARity

Set →
→ Query

Description	Sets or returns the LIN polarity.	
Syntax	:BUS<x>:LIN:POLARity {NORMal|INVerted|?}	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	NORMal	Normal LIN polarity
	INVerted	Inverted LIN polarity

Example
:BUS1:LIN:POLARity?
NORMAL
Returns the LIN polarity.

:BUS<x>:LIN:SOURce

Set → / → Query

Description	Sets or returns the LIN data source.	
Syntax	:BUS<x>:LIN:SOURce {CH1 | CH2 | CH3 | CH4}? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CH1 ~ CH4	Analog channel source
Example	:BUS1:LIN:SOURCE? >CH1 Returns the LIN source.	

:BUS<x>:LIN:STANDard

Set → / → Query

Description	Sets or returns the LIN standard.	
Syntax	:BUS<x>:LIN:STANDard {V1X|V2X|BOTH|?}	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	V1X	Lin standard version 1.x
	V2X	Lin standard version 2.x
	BOTH	Both standards
Example	:BUS1:LIN:STANDard? >BOTH Returns the LIN standard.	

:BUS<x>:LIN:THReshold

Set → / → Query

Description	Set or query LIN decode threshold.	
Syntax	:BUS<x>:LIN:THReshold <NR3> :BUS<x>:LIN:THReshold?	
Parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.

	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.
Example	:BUS1:LIN:THReshold 1.0 Set decode 1 threshold to 1V	

:BUS<x>:SPI:FRAMING

Set → / → Query

Description	Set or query decode mode of SPI decode.	
Syntax	:BUS<x>:SPI:FRAMING {SS|IDLEtime} :BUS<x>:SPI:FRAMING?	
Parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	SS	Chip select.
	IDLEtime	Timeout
Example	:BUS1:SPI:FRAMING SS Set decode 1 decode mode of SPI decode to SS	

:BUS<x>:SPI:IDLETime

Set → / → Query

Description	Set or query SPI decode idle time.	
Syntax	:BUS<x>:SPI:IDLETime <NR3> :BUS<x>:SPI:IDLETime?	
Parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Set decode idle time, unit is s.
Example	:BUS1:SPI:IDLETime 1 Set decode idle time to 1s	

:BUS<x>:SPI:SCLK:POLARity

Set → / → Query

Description	Sets or queries the polarity of the SCLK line for the SPI bus.	
Syntax	:BUS<x>:SPI:SCLK:POLARity { FALL | RISE | ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	FALL	Sets the polarity to falling edge.
	RISE	Sets the polarity to rising edge.
Example	:BUS1:SPI:SCLK:POLARity FALL Sets the polarity to falling edge.	

:BUS<x>:SPI:SCLK:SOURce

Set → / → Query

Description	Sets or queries which channel is used for the SPI SCLK source.	
Syntax	:BUS<x>:SPI:SCLK:SOURce {CH1|CH2|CH3|CH4| ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CH1 to CH4	Analog channels CH1 to CH4

Example	:BUS1:SPI:SCLK:SOURce CH1 Sets channel 1 as the SPI SCLK source.

:BUS<x>:SPI:SCLK:THReshold

Set → / → Query

Description	Set or query SPI decode idle time.	
Syntax	:BUS<x>:SPI:SCLK:THReshold <NR3> :BUS<x>:SPI:SCLK:THReshold?	
Parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.
Example	:BUS<x>:SPI:SCLK:THReshold 1.0 Set threshold of the SCL selected source for SPI decode 1 to 1V	

:BUS<x>:SPI:SS:POLARity

Set → / → Query

Description	Sets or queries the polarity of the SS line for the SPI bus.	
Syntax	:BUS<x>:SPI:SS:POLARity { LOW | HIGH | ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	LOW	Active low polarity
	HIGH	Active high polarity
Example	:BUS1:SPI:SS:POLARity LOW Sets the SS line to active low.	

:BUS<x>:SPI:SS:SOURce

Set → / → Query

Description	Sets or queries which channel is used for the SPI SS source.
Syntax	:BUS<x>:SPI:SS:SOURce {CH1 | CH2 | CH3 | CH4 | ? }
Parameter/Return parameter	<x> 1 or 2, indicating decoding 1 or 2 CH1 to CH4 Analog channels CH1 to CH4
Example	:BUS1:SPI:SS:SOURce CH1 Sets channel 1 as the SPI SS source.

:BUS<x>:SPI:SS:THReshold

Set → / → Query

Description	Set or query SPI decode chip select mode CS threshold.
Syntax	:BUS<x>:SPI:SS:THReshold <NR3> :BUS<x>:SPI:SS:THReshold?
Parameter/Return parameter	<x> It can be 1 or 2, indicating decoding one or decoding two. <NR3> Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.
Example	:BUS1:SPI:SS:THReshold 1.0 Set SPI decode 1 chip select mode CS threshold to 1V.

:BUS<x>:SPI:DATa{:OUT|:MOSI}:THReshold

Set → / → Query

Description	Set or query SPI decode chip select mode MOSI threshold.
Syntax	:BUS<x>:SPI:DATa{:OUT|:MOSI}:THReshold <NR3> :BUS<x>:SPI:DATa{:OUT|:MOSI}:THReshold?

Parameter/Return parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.
Example	:BUS1:SPI:DATa{:OUT|:MOSI}:THReshold 1.0 Set SPI decode 1 chip select mode MOSI threshold to 1V	

:BUS<x>:SPI:DATa{:IN|:MOSI}:THReshold

Set / Query

Description	Set or query SPI decode chip select mode MOSI threshold.	
Syntax	:BUS<x>:SPI:DATa{:IN|:MOSI}:THReshold <NR3> :BUS<x>:SPI:DATa{:IN|:MOSI}:THReshold?	
Parameter/Return parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.
Example	:BUS1:SPI:DATa{:IN|:MOSI}:THReshold 1.0 Set SPI decode 1 chip select mode MOSI threshold to 1V	

:BUS<x>:SPI:WORDSize

Set / Query

Description	Sets the number of bits per word for the SPI bus.	
Syntax	:BUS<x>:SPI:WORDSize {<NR1> | ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	<NR1>	Bits per word (4~32)
Example	:BUS1:SPI:WORDSize 4 Sets the word size to 4 bits per word.	

:BUS<x>:SPI:BITORder

Set → / → Query

Description	Sets or queries the bit order for the SPI bus.	
Syntax	:BUS<x>:SPI:BITORder {<NR1> | ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	<NR1>	0: MSB bit first 1: LSB bit first
Example	:BUS1:SPI:BITORder? 0 The bit order is currently set as MSB bit first.	

:BUS<x>:SPI:MOSI:SOURce

Set → / → Query

Description	Sets or queries which channel is used for the SPI MOSI source.	
Syntax	:BUS<x>:SPI:MOSI:SOURce {OFF | CH1 |CH2 |CH3| CH4 |? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CH1 to CH4	Analog channels CH1 to CH4
	OFF	No MOSI source.
Example	:BUS1:SPI:MOSI:SOURce CH1 Sets channel 1 as the SPI MOSI source.	

:BUS<x>:SPI:MISO:SOURce

Set → / → Query

Description	Sets or queries which channel is used for the SPI MISO source.	
Syntax	:BUS<x>:SPI:MISO:SOURce{OFF|CH1|CH2|CH3|CH4|?}	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CH1 to CH4	Analog channels CH1 to CH4
	OFF	No MISO source.
Example	:BUS1:SPI:MISO:SOURce CH1 Sets channel CH1 as the SPI MISO source.	

Label Commands

:CHANnel<X>:LABel

Set → / → Query

Description	Sets or returns the file label for the selected channel.	
Syntax	:CHANnel<X>:LABel {<string> | ?}	
Related commands	:CHANnel<X>:LABel:DISPlay	
Parameter	<X>	Channel 1, 2, 3, 4
	<string>	The string must be no more than 8 characters and only contain alphanumeric characters in addition to period, dash and underscore characters. The string must be enclosed in double quotes, “string”.
Return parameter	<string>	Returns the label for the selected channel. No return indicates that there has not been a file label assigned for the selected channel.
Example1	:CHANnel1:LABel "CH1_lab" Sets the channel 1 label as "CH1_lab".	
Example2	:CHANnel1:LABel? CH1_lab	

:CHANnel<X>:LABel:DISPlay

Set →
→ Query

Description	Turns the label on/off for the selected channel or returns its status.	
Syntax	:CHANnel<X>:LABel:DISPlay { OFF | ON | ? }	
Related commands	:CHANnel<X>:LABel	
Parameter	<X>	Channel 1, 2, 3, 4
	OFF	Turns the file label off for the selected channel.
	ON	Turns the file label on for the selected channel.
Return parameter	Returns the status of the file label for the selected channel (ON, OFF).	
Example	:CHANnel1:LABel "CH1" :CHANnel1:LABel:DISPlay ON :CHANnel1:LABel:DISPlay? ON Sets the channel 1 label to "CH1" and then turns the label display on. The query return shows that the label is on.	

:REF<X>:LABel

Set →
→ Query

Description	Sets or returns the file label for the selected reference waveform.	
Syntax	:REF<X>:LABel {<string> | ?}	
Related commands	:REF<X>:LABel:DISPlay	
Parameter	<X>	REF 1, 2, 3, 4

	<string>	The string must be no more than 8 characters and only contain alphanumeric characters in addition to period, dash and underscore characters. The string must be enclosed in double quotes, “string”.
Return parameter	<string>	Returns the label for the selected reference waveform. No return indicates that there has not been a file label assigned for the selected reference waveform.
Example1	:REF1:LABel "REF1_lab" Sets the REF1 label as "REF1_lab".	
Example2	:REF1:LABel? REF1_lab	

:REF<X>:LABel:DISPlay

Set → / → Query

Description	Turns the label on/off for the selected reference waveform or returns its status.	
Syntax	:REF<X>:LABel:DISPlay { OFF | ON | ? }	
Related commands	:REF<X>:LABel	
Parameter	<X>	Reference waveform 1, 2, 3, 4
	OFF	Turns the file label off for the selected reference waveform.
	ON	Turns the file label on for the selected reference waveform.
Return parameter	Returns the status of the file label for the selected reference waveform (ON, OFF).	
Example	:REF1:LABel "REF1" :REF1:LABel:DISPlay ON :REF1:LABel:DISPlay?	

	ON Sets the label for reference waveform 1 to "REF1" and then turns the label display on. The query return shows that the label is on.

:BUS<x>:LABel

Set → Query

Description	Sets or returns the file label for the bus.	
Syntax	:BUS<x>:LABel {<string> | ?}	
Related commands	:BUS<x>:LABel:DISPlay	
Parameter	<x>	1 or 2, indicating decoding 1 or 2
	<string>	The string must be no more than 8 characters and only contain alphanumeric characters in addition to period, dash and underscore characters. The string must be enclosed in double quotes, “string”.
Return parameter	<string>	Returns the label for the bus. No return indicates that there has not been a file label assigned for bus.
Example1	:BUS1:LABel "Bus" Sets the bus label as "Bus".	
Example2	:BUS1:LABel? Bus	

:BUS<x>:LABel:DISPlay

Set → / → Query

Description	Turns the label on/off for the bus or returns its status.	
Syntax	:BUS1:LABel:DISPlay { OFF | ON | ? }	
Related commands	:BUS<x>:LABel	
Parameter	<x>	1 or 2, indicating decoding 1 or 2
	OFF	Turns the file label off for the bus.
	ON	Turns the file label on for the bus.
Return parameter	Returns the status of the file label for the bus (ON, OFF).	

DVM Commands

:DVM:STATE

Set → Query

Description	Sets or queries the DVM state to on or off.	
Syntax	:DVM:STATE {OFF | ON | ? }	
Related commands	:DVM:SOURce :DVM:MODe	
Parameter/ Return parameter	OFF	Turns the DVM off.
	ON	Turns the DVM on.
Example	:DVM:STATE ON Turns the DVM state on.	

:DVM:SOURce

Set → Query

Description	Sets or queries the source of the DVM.	
Syntax	:DVM:SOURce {CH1|CH2|CH3|CH4|?}	
Related commands	:DVM:STATE :DVM:MODe	
Parameter/ Return parameter	CH1~CH4	Channel 1 to 4.
Example	:DVM:SOURce CH1 Sets the DVM source to channel 1.	

:DVM:MODe

Set → Query

Description	Sets or queries the DVM mode.
Syntax	:DVM:MODe { ACRMS|ACDCRMS|DC|?}

Related commands	:DVM:SOURce :DVM:STATE	
Parameter/ Return parameter	OFF	Disable DVM function.
	Other Parameters	Sets the mode to DC Turn on DVM function and set the corresponding mode.
Example	:DVM:MODe ACRMS Sets the DVM mode to ACRMS.	

:DVM{RESET}

Set →

Description	Set DVM to initialization state.
Syntax	:DVM {RESET}
Example	:DVM RESET Set DVM to initialization state.

:DVM:STATistics RESet

Set →

Description	Reset DVM statistics function.162
Syntax	:DVM:STATistics RESet
Example	:DVM:STATistics RESet Reset DVM statistics function.

:DVM:STATistics:MAXimum

→ Query

Description	Query statistics maximum.
Syntax	:DVM:STATistics:MAXimum?
Example	:DVM:STATistics:MAXimum? :DVM:STATISTICS:MAXIMUM 243.0222E+9 Query statistics maximum.

:DVM:STATistics:MINImum → Query

Description	Query statistics minimum.
Syntax	:DVM:STATistics:MINImum?
Example	:DVM:STATistics:MINImum? :DVM:STATISTICS:MINIMUM 204.5778E+9 Query statistics minimum.

:DVM:STATistics:{AVG|AVErage} → Query

Description	Query statistics average.
Syntax	:DVM:STATistics:{AVG|AVErage}?
Example	:DVM:STATistics:AVErage ? :DVM:STATISTICS:AVERAGE 234.1950E+9 Query statistics average

:DVM:ALARm:MODe

Set → / → Query

Description	Query or set the alarm mode of DVM function.
Syntax	:DVM:ALARm:MODe {OFF|ON|BEEP} :DVM:ALARm:MODe?
Parameter/ Return parameter	OFF Disable alarm. ON Enable alarm. BEEP Turn on the alarm and activate the buzzer.
Example	:DVM:ALARm:MODe ON Set DVM alarm mode to ON

:DVM:ALARm:HIGHLimit

Set → / → Query

Description	Query or set the alarm upper limit value of DVM function.
Syntax	:DVM:ALARm:HIGHLimit <NR3> :DVM:ALARm:HIGHLimit?
Parameter/ Return parameter	<NR3> Default unit is V.
Example 1	:DVM:ALARm:HIGHLimit 1 Set alarm upper limit value to 1V.
Example 2	:DVM:ALARm:HIGHLimit? > 1.0000 Query alarm upper limit value.

:DVM:ALARm:LOWLimit

Set → / → Query

Description	Query or set the alarm lower limit value of DVM function.
Syntax	:DVM:ALARm:LOWLimit <NR3> :DVM:ALARm:LOWLimit?

Parameter/ Return parameter	<NR3>	Default unit is V.
Example 1	:DVM:ALARm:LOWLimit 1 Set alarm lower limit value to 1V.	
Example 2	:DVM:ALARm:HIGHLimit? > 1.0000 Query alarm lower limit value.	

:DVM:ALARm:WHEN

Set → Query

Description	Query or set the alarm limit conditions of DVM function.	
Syntax	:DVM:ALARm:WHEN {INSLimit|OUTLimit} :DVM:ALARm:WHEN?	
Parameter	INSLimit	Inside Limit.
	OUTLimit	Outside Limit.
Example	:DVM:ALARm:WHEN OUTLimit Set alarm limit condition to outlimit.	

:DVM:VALue

→ Query

Description	Returns the measurement value of the selected mode.
Syntax	:DVM:VALue?
Related commands	:DVM:SOURce :DVM:STATE :DVD:MODe
Return parameter	Returns the measurement value as <NR3>.
Example	:DVM:VALue? >8.410E-04 Returns the measurement.

AWG Commands

:AWG<x>:AMPlitude

Set → / → Query

Description	Sets or returns the waveform amplitude.	
Syntax	:AWG<x>:AMPlitude {<NRf> | ?}	
Related command	:AWG<x>:OUTPut:LOAd:IMPEDance	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Amplitude in Volts. (50Ω impedance 0.1~2.5V) (High Z impedance 0.2~5V)
Example	:AWG1:AMP 1	

:AWG<x>:FREQuency

Set → / → Query

Description	Sets or returns the waveform frequency.	
Syntax	:AWG<x>:FREQuency {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Frequency in Hertz.
Example	:AWG1:FREQ 2000	

:AWG<x>:FUNCtion

Set → / → Query

Description	Sets or returns the type of waveform.	
Syntax	:AWG<x>:FUNCtion {ARBitrary | SINE | SQUAre | PULSe | RAMP | DC | NOISe | BUTTERWorth | COMBin | CPulse | ROUNDSHalf | BANDLimited | BLASEIWave | CHEBYSHEV1 | CHEBYSHEV2 | DAMPEDOsc | DUALTone BESSELJ | BESSELY | LOG | X2 | X3 | LFPulse | TENS1 | EOG | COSH | COT | COTH | COTHCon | CSC | CSCCon | CSCPro | CSCH | CSCHCon | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	ARBitrary	Arbitrary waveform
	SINE	Sine waveform
	SQUAre	Square waveform
	PULSe	Pulse waveform
	RAMP	Ramp waveform
	DC	DC waveform
	BUTTERWorth	BUTTERWorth waveform
	COMBin	COMBin waveform
	CPulse	CPulse waveform
	ROUNDSHalf	ROUNDSHalf waveform
	BANDLimited	BANDLimited waveform
	BLASEIWave	BLASEIWave waveform
	CHEBYSHEV1	CHEBYSHEV1 waveform

CHEBYSHEV2	CHEBYSHEV2 waveform
DAMPEDOsc	DAMPEDOsc waveform
DUALTone BESSEL	DUALTone BESSEL waveform
BESSELY	BESSELY aveform
LOG	LOG waveform
X2	X2 waveform
X3	X3 waveform
LFPulse	LFPulse waveform
TENS1	TENS1waveform
EOG	EOG waveform
COSH	COSH waveform
COT	COT waveform
COTH	COTH waveform
COTHCon	COTHCon waveform
CSC	CSC waveform
CSCCon	CSCCon waveform
CSCPro	CSCPro waveform
CSCH	CSCH waveform
CSCHCon	CSCHCon waveform
NOISe	Noise waveform

Example :AWG1:FUNC?

>SINE

:AWG<x>:OFFSet

Set →
→ Query

Description	Sets or returns the waveform offset.	
Syntax	:AWG<x>:OFFSet {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Offset in Volts.
Example	:AWG1:OFFS	

:AWG<x>:OUTPut:LOAd:IMPEDance

Set →
→ Query

Description	Sets or returns the output termination	
Syntax	:AWG<x>:OUTPut:LOAd:IMPEDance {FIFty | HIGHZ | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2
	FIFTy	50 Ohm output termination
	HIGHZ	High Z output termination
Example	:AWG1:OUTP:LOA:IMPED HIGHZ Sets the output termination of channel 1 to high impedance.	

:AWG<x>:OUTPut:STATE

Set →
→ Query

Description	Sets or returns the channel output state.	
Syntax	:AWG<x>:OUTPut:STATE {OFF | ON | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2
	OFF	Turns the channel output off
	ON	Turns the channel output on
Example	:AWG1:OUTP:STATE OFF Turns the channel 1 output off.	

:AWG<x>:PHAse

Set → / → Query

Description	Sets or returns the channel phase.	
Syntax	:AWG<x>:PHAse {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Phase in degree -180~180°
Example	:AWG1:PHA 45 Sets the channel 1 phase to 45°.	

:AWG<x>:PULSe:DUTYcycle

Set → / → Query

Description	Sets or returns the pulse duty cycle.	
Syntax	:AWG<x>:PULSe:DUTYcycle {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Duty cycle in percentage 0.2~99.8%
Example	:AWG1:PULS:DUTY 50 Sets the channel 1 pulse duty cycle to 50%.	

:AWG<x>:RAMP:SYMmetry

Set → / → Query

Description	Sets or returns the ramp symmetry.	
Syntax	:AWG<x>:RAMP:SYMmetry {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Symmetry of the ramp waveform 0~100%
Example	:AWG1:RAMP:SYM 15 Sets the channel 1 ramp symmetry to 15%.	

:AWG<x>:MODulation:STATE

Set → / → Query

Description	Sets or returns the modulation state.	
Syntax	:AWG<x>:MODulation:STATE {OFF | ON | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	OFF	Sets the modulation to off.
	ON	Sets the modulation to on.
Example	:AWG1:MOD:STATE ON Turns the modulation on for channel 1.	

:AWG<x>:MODulation:TYPe

Set → / → Query

Description	Sets or returns the type of modulation.	
Syntax	:AWG<x>MODulation:TYPe {AM | FM | FSK | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	AM	Sets a AM modulation.
	FM	Sets a FM modulation.
	FSK	Sets a FSK modulation.
Example	:AWG1:MOD:TYPE AM Sets a AM modulation for channel 1.	

:AWG<x>:MODulation:AM:DEPth

Set → / → Query

Description	Sets or returns the AM modulation depth.	
Syntax	:AWG<x>:MODulation:AM:DEPth {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	AM depth in percentage 0~120%.
Example	:AWG1:MOD:AM:DEP?	
	>1.20000e+02	

:AWG<x>:MODulation:AM:FREQ

Set → / → Query

Description	Sets or returns the AM modulation frequency.	
Syntax	:AWG<x>:MODulation:AM:FREQ {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	AM frequency in Hertz.
Example	:AWG1:MOD:AM:FREQ 1000	
	Sets the AM frequency to 1kHz.	

:AWG<x>:MODulation:AM:SHApe

Set → / → Query

Description	Sets or returns the shape of the AM modulation.	
Syntax	:AWG<x>:MODulation:AM:SHAPe {SINE | SQUare | RAMP | NOISe | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	SINE	Sine wave shape.
	SQUare	Square wave shape.
	RAMP	Ramp wave shape.
	NOISe	Noise wave shape.

Example	:AWG1:MOD:AM:SHA RAMP Sets a ramp shape to the AM modulating waveform.

:AWG<x>:MODulation:FM:DEV

Set → / → Query

Description	Sets or returns the deviation of the FM modulation.	
Syntax	:AWG<x>:MODulation:FM:DEV {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Frequency deviation in Hertz.
Example	:AWG1:MOD:FM:DEV? >2.000000000e+02	

:AWG<x>:MODulation:FM:FREQ

Set → / → Query

Description	Sets or returns the frequency of the FM modulation.	
Syntax	:AWG<x>:MODulation:FM:FREQ {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Frequency in Hertz.
Example	:AWG1:MOD:FM:FREQ 1000 Sets the frequency of the FM modulating waveform to 1kHz.	

:AWG<x>:MODulation:FM:SHApe

Set → / → Query

Description	Sets or returns the shape of the FM modulation.	
Syntax	:AWG<x>:MODulation:FM:SHApe {SINE | SQUare | RAMP | NOISe | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	SINE	Sine wave shape.
	SQUare	Square wave shape.

	RAMP	Ramp wave shape.
	NOISe	Noise wave shape.
Example	:AWG1:MOD:FM:SHA SINE Sets a sine shape to the FM modulation.	

:AWG<x>:MODulation:FSK:FREQ

Set → / → Query

Description	Sets or returns the hop frequency of the FSK modulation.	
Syntax	:AWG<x>:MODulation:FSK:FREQ {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Frequency in Hertz.
Example	:AWG1:MOD:FSK:FREQ 2000000 Sets the FSK hop frequency to 2MHz.	

:AWG<x>:MODulation:FSK:RATE

Set → / → Query

Description	Sets or returns the FSK modulation rate.	
Syntax	:AWG<x>:MODulation:FSK:RATE {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Frequency in Hertz.
Example	:AWG1:MOD:FSK:RATE 100000 Sets the FSK rate to 100kHz.	

:AWG<x>:SWEep:TYPe

Set → / → Query

Description	Sets or returns the sweep mode type.	
Syntax	:AWG<x>:SWEep:TYPe {LINEAR | LOG | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	LINEAR	Sets the sweep mode to linear.
	LOG	Sets the sweep mode to logarithmic.

Example	:AWG1:SWE:TYP LIN Sets the sweep mode to linear for channel 1.

:AWG<x>:SWEep:START

Set →
→ Query

Description	Sets or returns the start frequency of the sweep mode.	
Syntax	:AWG<x>:SWEep:START {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Start frequency in Hertz.
Example	:AWG1:SWE:START 1000 Sets the sweep mode start frequency to 1kHz.	

:AWG<x>:SWEep:STOP

Set →
→ Query

Description	Sets or returns the stop frequency of the sweep mode.	
Syntax	:AWG<x>:SWEep:STOP {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Stop frequency in Hertz.
Example	:AWG1:SWE:STOP 500000 Sets the sweep mode stop frequency to 500kHz.	

:AWG<x>:SWEep:TIMe

Set →
→ Query

Description	Sets or returns the sweep time.	
Syntax	:AWG<x>:SWEep:TIMe {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Sweep time in seconds.
Example	:AWG1:SWE:TIM 6.500e-01 Sets the sweep time to 650ms.	

:AWG<x>:SWEep:SPAN

Set →
→ Query

Description	Alternatively to setting the start and stop frequencies, the span and center frequency can be set.	
Syntax	:AWG<x>:SWEep:SPAN {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Span of the sweep in Hertz.
Example	:AWG1:SWE:SPAN 1100 Sets the span of the sweep to 1.1kHz.	

:AWG<x>:SWEep:CENTer

Set →
→ Query

Description	Alternatively to setting the start and stop frequencies, the span and center frequency can be set.	
Syntax	:AWG<x>:SWEep:CENTer {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Center frequency of the sweep in Hertz.
Example	:AWG1:SWE:CENT 550 Sets the center frequency of the sweep to 550Hz.	

FRA Commands

:FRA:RUN

Set →
→ Query

Description	Runs the FRA function or returns the FRA state.
Syntax	:FRA:RUN :FRA:RUN?
Example	:FRA:RUN FRA starts.

:FRA:STOP

Set →
→ Query

Description	Stops the FRA function or returns the FRA state.
Syntax	:FRA:STOP :FRA:STOP?
Example	:FRA:STOP FRA stops.

:FRA:FREQuency:STARt

Set → / → Query

Description	Sets or returns the start frequency for FRA.	
Syntax	:FRA:FREQuency:STARt {<NRf>}	
	:FRA:FREQuency:STARt?	
Parameter	<NRf>	Sets the frequency to use. (Range:20Hz~25MHz)
Example	:FRA:FREQuency:STARt 100	
	Sets the start frequency as 100Hz.	

:FRA:FREQuency:STOP

Set → / → Query

Description	Sets or returns the stop frequency for FRA.	
Syntax	:FRA:FREQuency:STOP {<NRf>}	
	:FRA:FREQuency:STOP?	
Parameter	<NRf>	Sets the frequency to use. (Range:20Hz~25MHz)
Example	:FRA:FREQuency:STOP 500	
	Sets the start frequency as 500Hz.	

:FRA:POINt

Set → / → Query

Description	Sets or returns the number of processing points in a decade.	
Syntax	:FRA:POINt {<NR1>}	
	:FRA:POINt?	
Parameter	<NR1>	The number of points in a decade. (Range:10, 15, 30, 45, 90)
Example	:FRA:POINt 15	
	Sets the number of processing points as 15 in a decade.	

:FRA:DATA

→ Query

Description	Shows the detailed information of FRA settings and results.
Syntax	:FRA:DATA?
Example	:FRA:DATA? Shows the FRA result's detail.

:FRA:SAVETOCsv

Set →

Description	Saves the FRA result as a CSV file.
Syntax	:FRA:SAVETOCsv
Example	:FRA: SAVETOCsv Saves results as CSV file.

:FRA:STATe

→ Query

Description	Query or turn on/off the FRA function.	
Syntax	:FRA:STATe {ON|OFF} :FRA:STATe?	
Parameter	ON	Turn on the FRA. (No work when PWR function running)
	OFF	Turn off the FRA.
Example	:FRA:STATe ON :FRA:STATe? ON	